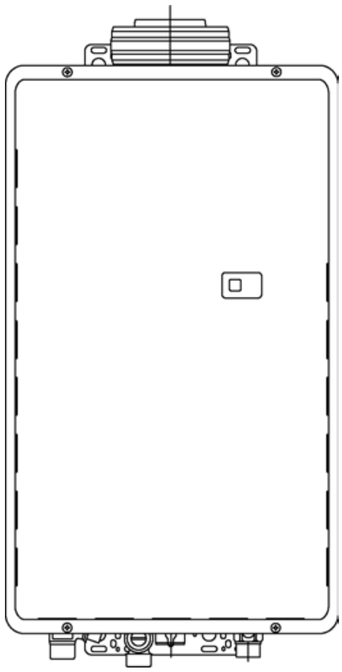
Rinnai

INFINITY 26i and HD50i

SERVICE MANUAL



Infinity High Capacity Continuous Flow Gas Hot Water System

The Rinnai Infinity 26i and Heavy Duty 50i water heater, when correctly installed, comply with the requirements of the United Kingdom Water Regulations / Byelaws (Scotland). These Products can be found listed in the Water Fittings and Materials Directory.

The Rinnai Infinity 26i water heater is CE Marked for UK and Ireland as allowed by Technigas of Belgium.
Certificate number E0716/5360
ID number 0461BO0739
Date of Issue 28 July 2003

Quality System Standard

ISO 9001 - 1994

The Design, Development, and Manufacture of Gas Water Heating Appliances done under Rinnai’s Quality Management System is certified under the Quality Management System Standard ISO 9001.

Registration Number JQ0003D
Registered since: February 1994
Certified by Japan Gas Appliances Inspection Association.

Produced by Rinnai Technical Services Department

August 2004 - Issue 1.

WARNING

Failure to comply with these instructions may result in serious personal injury or damage to the appliance.

ALL WIRING INSIDE THIS APPLIANCE MAY BE AT 230 VOLTS POTENTIAL

ALL SERVICE WORK MUST BE CARRIED OUT BY AN AUTHORISED PERSON.

DO NOT TEST FOR GAS ESCAPES WITH AN OPEN FLAME

This manual has been published by Rinnai U.K. Technical Services. While many individuals have contributed to this publication, it will be successful only if you - the reader and customer - find it useful. We would like to extend an invitation to users of this manual to make contact with us, as your feedback and suggestions are valuable resources for us to include as improvements. Rinnai are constantly working toward supply improved appliances as well as information, and specifications may be subject to alteration at any time.

Table of Contents

Glossary of Terms and Symbols

dB(A)	-	sound pressure level in decibels, "A" range
DC	-	direct current
AC	-	alternating current
WFCD	-	water flow control device
FB	-	feedback information
FF	-	feedforward information
Hz	-	Hertz
IC	-	integrated circuit
kcal/h	-	kilocalorie per hour
kW	-	kilowatts
LED	-	light emitting diode
L/min	-	Litres per minute
mA	-	milliamps
mbar	-	millibars of pressure
mm	-	millimetres
bar	-	gauge pressure
OHS	-	overheat switch
PCB	-	printed circuit board
CPU	-	central processing unit
POT	-	potentiometer
rpm	-	revolutions per minute
SV	-	solenoid valve
ø	-	diameter
$\Delta\,^{o}C$	-	temperature rise above ambient
POV	-	modulating valve
TE	-	thermal efficiency
TH	-	thermistor
T_{IN}	-	temperature of incoming water
T_{OUT}	-	temperature of outgoing water

1. Introduction

The Rinnai Infinity hot water units represents the latest technology in continuous flow, temperature controlled hot water.

Features

- The Infinity 26i and HD50i NEVER RUN OUT of hot water. Whilst electricity, water and gas supplies are connected, hot water is available whenever hot water taps are open.

- Built into the main micro-processor is the facility to LIMIT THE MAXIMUM TEMPERATURE of the hot water supplied. The water temperature may be limited to various maximum temperatures. This is particularly useful when the hot water unit is installed where young children or the infirm may be using the hot water. The Infinity is delivered with a maximum preset temperature of 55° C and the HD50i at 65° C. If required, the temperature limits can be changed by a service technician. For further information, please contact Rinnai.

- The Infinity is a power flued appliance. It is COMPACT, saving both floor and wall space.

- The temperature of outgoing hot water is CONSTANTLY MONITORED by a BUILT-IN SENSOR. If the temperature of the outgoing hot water rises to more than 3° C above the selected temperature shown on the Digital Monitor (or the pre-set limit when Remote Controls are not fitted), the burner will automatically go out. The burner will ignite again once the outgoing hot water temperature falls below the temperature shown on the Digital Monitor (or the pre-set limit).

- The burner lights automatically when the hot water tap is opened, and goes out when the tap is closed. IGNITION IS ELECTRONIC, therefore there is not pilot light. When the hot water tap is off, no gas is used.

- 'Deluxe' or 'Standard' Remote Controllers are available as an optional extra. Depending on the models chosen, these offer the following additional features :

  - Bath fill function

  - Voice Prompting

  - Localised Temperature Control for up to four controllers

  - Clock

- Temperatures selected at the controllers are retained in the SYSTEM MEMORY.

- Operating NOISE LEVEL IS VERY LOW.

- ERROR MESSAGES ARE DISPLAYED on the Remote Controllers, assisting with service.

2. Specifications

Model No.		Infinity 26i and HD50i
Type of Appliance		Temp.controlled continuous Flow Gas Hot Water Unit
Operation		With/without remote controls, mounted in Kitchen, bathroom, etc.
Flue System		Room Sealed - Forced Draught Flue
Installation		Internally mounted (Indoor Only)
Available Default Temperatures (*Note 1*): (without Remote Controllers)		40º C, 43º C, 50º C, 55º C, 60º C, 65º C, 75º C, 85º C (set by combination of Dip switches on PCB)
Temperature Range (with Remote Controllers)		Kitchen controller : 37 ~ 55º C
		Bathroom controller : 37 ~ 50º C
Dimensions (mm)	Width	350
	Height	600
	Depth	224
Weight (Kg)		22
Connections	Gas	3/4 in. BSP
	Cold Water Supply	3/4 in. BSP
	Hot Water Supply	3/4 in. BSP
Ignition System		Direct Electronic Ignition
Max. / Min. Gas Consumption	Natural Gas	54 -- 4.4 kW
	Propane Gas	54 -- 4.4 kW
Hot Water Delivery Capacity Max.		26 to 32 L/min.
Noise level		49 dB(A)
Thermal Efficiency		87%
NOXaf		55 ppm Max.
Minimum Operating Water Flow*:*		2.4 L/min.
Minimum Operating Pressure *(Note 2):*		1.8 bar
Maximum Operating Water flow		32 L/min.
Nominal Operating Pressure	Less than 60°C	1.4 bar
	Greater than or equal to 60°C	2.0 ~ 10.0 bar
Power Supply	Infinity Unit	AC 230 Volts (50 Hz)
	Remote Control (optional)	DC 12 Volts (Digital)
Water temperature control		Simulation feedforward and feedback
Water flow control		Electronic Water flow sensor, flow control & heat exchanger by-pass flow control.
Safety Device	Flame Failure	Flame rod
	Boil dry	Water flow sensor
	Remaining Flame (OHS)	97º C bi-metal switch
	Over temperature	95º C lockout thermistor
	Fusible link	129º C Thermal Fuse
	Pressure relief valve	Opens 20.6 bar, closes 14.7 bar
	Combustion fan rpm check	Integrated circuit system
	Over current	Glass fuse (3 Amp).
Remote Controllers (optional)	Kitchen	MC91-1A or MC-70-2A
	Bathroom	MC91-1A or BC-70-2A
	Second Bathroom	MC91-1A or BC-70-2A
	Third Bathroom	MC91-1A
Remote Controller Cable (Optional)		Two core sheathed (double insulated) flex with min.cross-sectional area of 0.5 mm²
Electrical Consumption	Normal	80W
	Standby	7.5 W (with 1 Remote Control)
Manifold Electronic Control System (Optional)		MSA-2M, MSA-2S

Note 1: The default factory setting is 55ºC for the Infinity26i, and 65°C for HD50i. The unit can be ordered from Rinnai to be pre-set to any of the other temperatures listed. The unit can be pre-set to any of the temperatures listed by a suitably qualified person.

Controllers are available with default temperatures up to 75º C. When fitted with controllers, only temperatures not exceeding the default temperatures can be selected. When fitted without controllers, the unit will deliver water at the default temperature. Controllers are not available with 85° C settings.

Note 2: Unit will operate at lower pressures but the maximum rated flow of 32L/min. will not be achieved.

Sensors and Safety Devices

- Heat Exchanger Thermistor: Measures hot water temperature at heat exchanger outlet. If water temperature reaches a predetermined limit, gas supply is stopped.
- Hot Water Delivery Thermistor: Measures hot water temperature at the outlet valve (i.e. the 'mixed' temperature).
- Flame Rod: Monitors combustion characteristics inside the combustion chamber. If the flame fails, gas supply is stopped.
- Overheat Switch: Situated on the heat exchanger, gas supply is stopped when water temperature reaches 97ºC for a number of seconds.
- Fusible Link: Situated on the heat exchanger, electrical power supply is stopped if the temperature exceeds 129ºC.
- Water Pressure Relief Valve: Safeguards the water circuit against excessive inlet pressure. Opens at 20.6 bar, closes at 14.7 bar.
- Electrical Fuse: (3A glass fuse) prevents against over-current.
  Surge Protector: prevents against over-current.
- Boil Dry Prevention: If water flow sensor detects no flow, gas supply is stopped.
- Combustion Fan Speed Sensor: In case of combustion fan defect (no rotation of fan) gas supply is stopped.
- Temperature Cutout: If the delivered hot water temperature rises above the required delivery temperature for a number of seconds, the gas supply is stopped.

Combustion Specifications

Gas Type	Injector Size (mm) Upper / Lower	Nominal TPP (mbar) * *		Gas Input (kW)	
		Low	High	Low	High
Natural	1.00	1.9	8.5	4.4	54
	1.7				
Propane	0.75	2.3	10.8	4.4	54
	1.15				

* * The TPP is measured with the cover 'off' the appliance at the regulator test point with supply pressures of 20 mbar (NG) and 37 mbar (Propane).

3. Water Flow Rates and Pressures

Water Flows

Table 1 shows unmixed and mixed water flow rates and approximate gas consumptions for various temperature rises. The unmixed flow rates are the flow rates available at the given temperature rise directly at the outlet of the water heater. The mixed water flow rates are available at the given temperature rise by mixing hot water from the outlet of the water heater with cold water from the mains supply.

Water Flows can also be calculated by the following formula:

$M = 60 \times (Q / C \times \Delta T)$

Where M = Water flow rate in litres/minute. If M is ≤ to 26, the water is unmixed. If M is > 26, the water is mixed.
Q = Heat energy output in kW = 47kW for the Infinity 26i and HD50i
C = Specific heat of water = 4.2KJ/Kg °C. C does not change for the purpose of this calculation.
ΔT = Temperature rise required (°C)

Example:
What is the flow rate available with an incoming water temperature of 10°C and a required temperature of 20°C?

$\Delta T = 20 - 10 = 10$°C
Q = 47
C = 4.2
$M = 60 \times (47 / (4.2 \times 10)) = 67$ l/min. Since 67 is greater than 26 this flow rate is mixed. This result corresponds with the value in Table 1.

Table 1: Approximate Water Flows & Gas Usage - Rinnai Infinity 26i and HD50i - Preset Table

Table 1. Approx. Water Flows & Gas Usage - Rinnai 26i and HD50i Preset Temp. **Less than 60°C**.

Models (Preset temps *less than* 60 C)	Temp *Rise* (° C) →	5					10					15					20				
	Approx. Min / Max Gas Input kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW
Infinity 26 i and HD 50i	4.4-54	0.53	32	1920	1.4	13	0.53	32	1920	1.4	26	0.53	32	1920	1.4	39	0.53	32	1920	1.4	52

Models (Preset temps *less than* 60 C)	Temp *Rise* (° C)	25					30					35					40				
	Approx. Min / Max Gas Input kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW
Infinity 26 i and HD 50i	4.4-54	0.44	26.4	1584	1.0	54	0.37	22.2	1332	0.65	54	0.32	19.2	1152	0.5	54	0.28	16.8	1008	0.4	54

Models (Preset temps *less than* 60 C)	Temp *Rise* (° C) →	45					50					55					60				
	Approx. Min / Max Gas Input kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW
Infinity 26 i and HD 50i	4.4-54	0.25	15	900	0.3	54	0.22	13.2	792	0.25	54	0.2	12	720	0.23	54	0.19	11.4	684	0.2	54

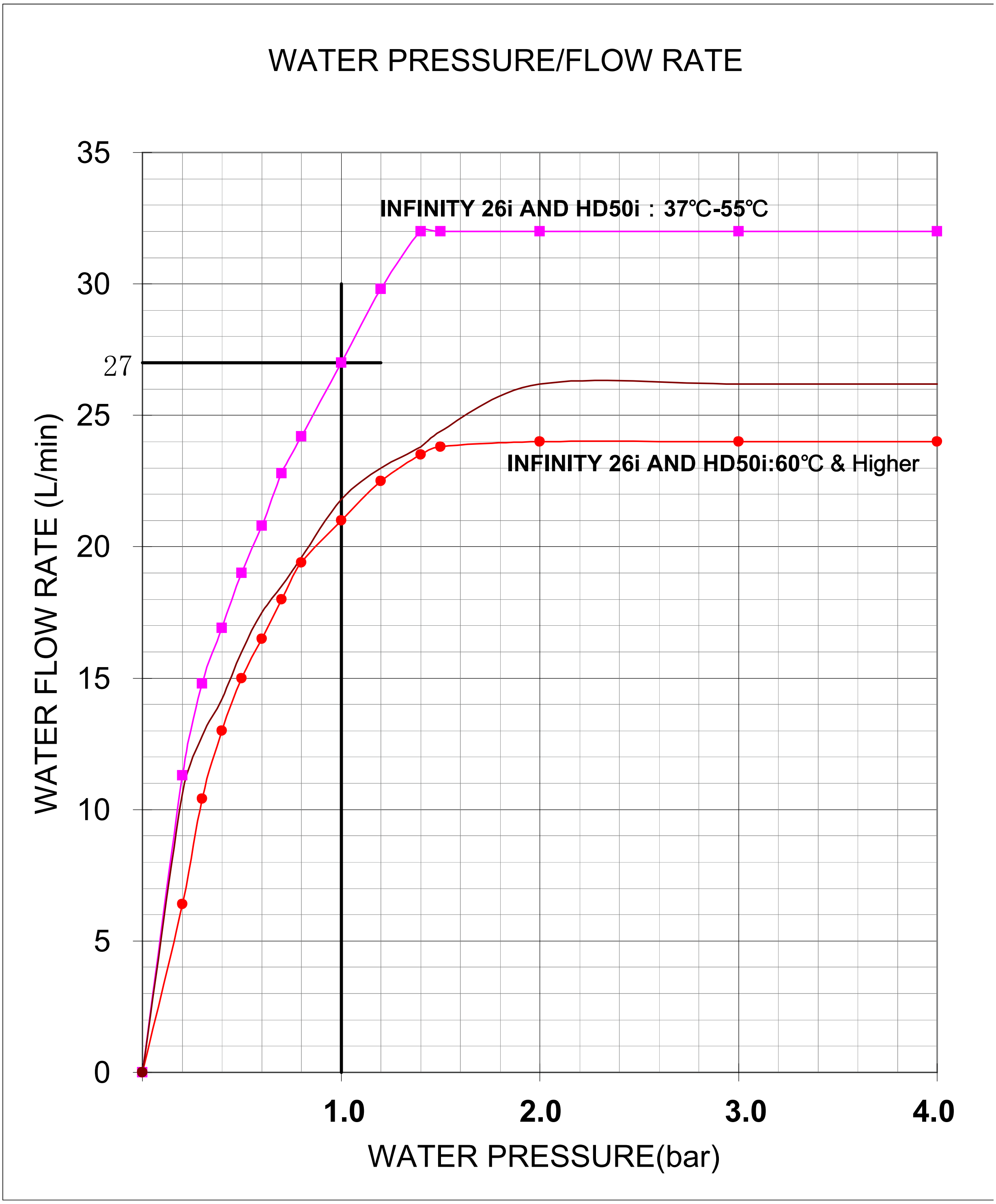
Models (Preset temps *less than* 60 C)	Temp *Rise* (° C)	65					70					75					80				
	Approx. Min / Max Gas Input kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW
Infinity 26 i and HD 50i	4.4-54	0.17	10.2	612	0.19	54	0.16	9.6	576	0.18	54	0.15	9	540	0.17	54	0.14	8.4	504	0.16	54

Approx.Water Flows & Gas Usage -Rinnai Infinity26i and 50i Preset Temp.**Greater than or equal to 60°C**

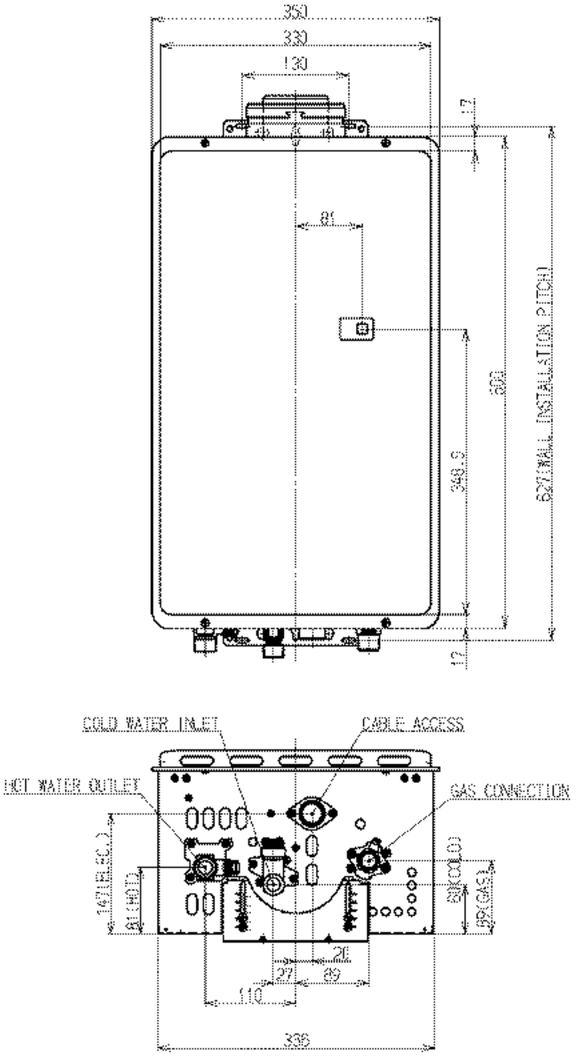
Models (Preset temps *greater than or equal* to 60 C)	Temp *Rise* (° C) →	5					10					15					20				
	Approx. Min / Max Gas Input kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW
Infinity 26 i and HD 50i	4.4-54	0.4	24	1440	2.0	10	0.4	24	1440	2.0	20	0.4	24	1440	2.0	30	0.4	24	1440	2.0	40
Models (Preset temps *greater than or equal* to 60 C)	Temp *Rise* (° C)	25					30					35					40				
	Approx. Min / Max Gas Input kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW
Infinity 26 i and HD 50i	4.4-54	0.4	24	1440	2.0	50	0.37	22.2	1332	1.1	54	0.32	19.2	1152	0.8	54	0.28	16.8	1008	0.6	54
Models (Preset temps *greater than or equal* to 60 C)	Temp *Rise* (° C) →	45					50					55					60				
	Approx. Min / Max Gas Input kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW
Infinity 26 i and HD 50i	4.4-54	0.25	15	900	0.5	54	0.22	13.2	792	0.4	54	0.2	12	720	0.4	54	0.19	11.4	684	0.3	54
Models (Preset temps *greater than or equal* to 60 C)	Temp *Rise* (° C)	65					70					75					80				
	Approx. Min / Max Gas Input kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW	L/sec	L/min	L/hr	Min Water Pressure bar	Approx Gas Cons. kW
Infinity 26 i and HD 50i	4.4-54	0.17	10.2	612	0.3	54	0.16	9.6	576	0.3	54	0.15	9	540	0.27	54	0.14	8.4	504	0.25	54

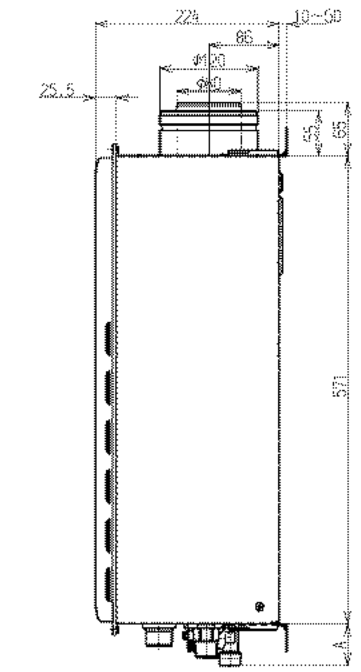
Water Pressure

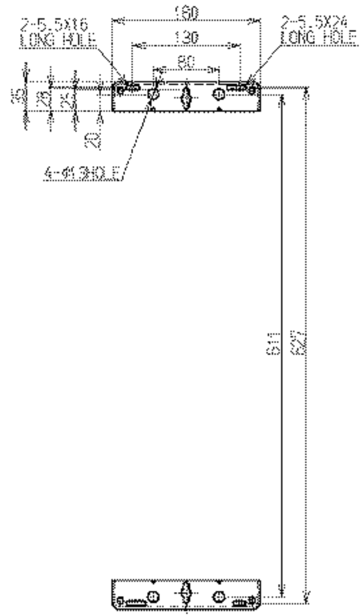
The water pressure vs flow characteristics are as follows:



4. Dimensions







Note:All dimensions are in mm.

	A DIMENSION
GAS	41
COLD	51
HOT	42
ELEC.	27

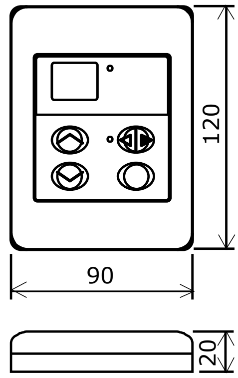
5. Remote Controls

Remote Controls

Remote Controllers are an optional extra. 'Standard' and 'Deluxe' controllers can be fitted.

Standard controllers allow temperature selection only. Deluxe controllers have temperature selection, bath-fill and voice prompting functions. For detailed information regarding controller operation refer to the 'How to use your water heater' booklet supplied with the appliance. Other manufacturers' controllers are NOT compatible with this appliance.

MC-91-1A



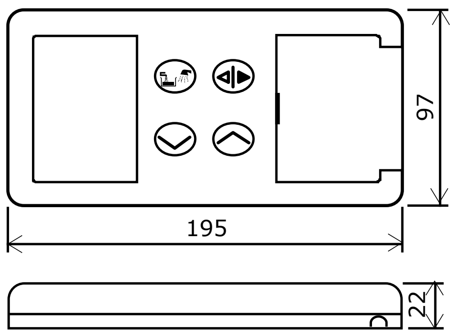
Standard Controller (Model MC-91)

Up to 4 Standard Controllers can be fitted to the appliance. They are normally installed in the areas where the majority of hot water is used, for example, the kitchen, bathroom, ensuite and laundry.

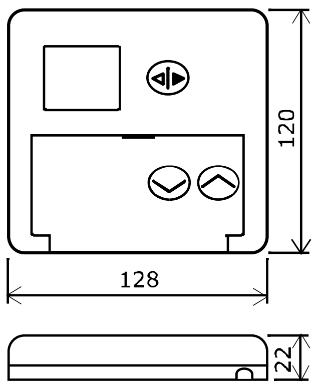
Deluxe Kitchen Remote Control (MC-70) and (BC-70A)

Deluxe controllers have 'Kitchen' (MC-70-2A) and 'Bathroom' (BC-70-2A) versions. 'Kitchen' controls are intended for the Kitchen or other convenient area where the majority of hot water is used. Bathroom Controllers are intended to be fitted in the bathroom or ensuite and allow the user to have a bath filled to the required level and temperature automatically.

BC-70-2A



MC-70-2A



:

Up to three 'Deluxe' Controllers can be connected		
Kitchen	**Bathroom**	**Ensuite**
MC70-2A		
MC70-2A		
MC70-2A	BC70-2A	
MC70-2A	BC70-2A	BC70-2A

If a fourth Controller is required a 'Standard' Controller can be included			
Kitchen	**Bathroom**	**Ensuite**	**Laundry**
MC70-2A			
MC70-2A			
MC70-2A	BC70-2A		
MC70-2A	BC70-2A	BC70-2A	MC91-1A

Positioning of Controllers

Controllers must be installed in shaded and clean locations. They should be fitted out of reach of children (suggested height from floor at least 1500mm). Controllers are water resistant, however, durability is improved when positioned outside the shower recess or at least 400mm above the highest part of a sink, basin or bath.

DO NOT INSTALL THE CONTROLLERS

- NEAR A HEAT SOURCE, SUCH AS A COOK TOP, STOVE OR OVEN. HEAT, STEAM, SMOKE AND HOT OIL MAY CAUSE DAMAGE
- IN DIRECT SUNLIGHT
- OUTDOORS UNLESS AN ENCLOSURE IS PROVIDED WHICH PROTECTS THE CONTROLLER AGAINST SUNLIGHT AND DUST INGRESS.
- AGAINST A METAL WALL UNLESS THE WALL IS EARTHED IN ACCORDANCE WITH CURRENT REGULATIONS.

Remote Controller Connection

Remote controls operate at extra low voltage (12 Volts DC) which is supplied from the appliance. Controllers are supplied with 15 m of electrical cable. The cable wires for connection to the appliance are fitted with spade terminals.

Extension cables are available from Rinnai. Alternatively, a two core sheathed (double insulated) flex with minimum cross-sectional area of 0.5 mm^2 can be used. Maximum cable length is 50 m.

For connection refer to the “CONNECTING REMOTE CONTROL CABLES” section.

If the front cover of the appliance contains the following text install it in accordance with Diagram 1 below:

Water Heater and Controller installation configurations

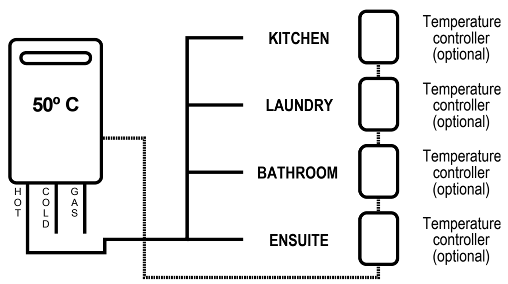


Diagram 1. Max. 50º C Appliance

If the front cover of the appliance does NOT contain the above text install it in accordance with Diagram 2:

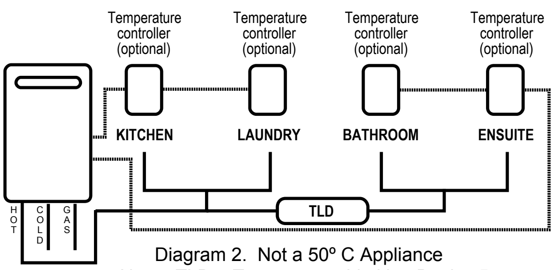


Diagram 2. Not a 50º C Appliance
Note: TLD = Temperature Limiting Device Recommended.

IMPORTANT: If the appliance is to deliver water primarily for the purposes of personal hygiene in an early childhood centre, primary or secondary school, nursing home or similar facility for young, aged, sick or disabled persons a Temperature Limiting Device (TLD), such as a Thermostatic Mixing Valve, may be required even if the appliance is set to 50ºC or less. For these types of applications contact Rinnai UK.

Connecting remote control cables

Do not attempt to connect the remote control cable terminals to the appliance with the power on.
RISK OF ELECTRICAL SHOCK.

Connecting One or Two Controllers

1. Isolate the power supply
2. Remove the front cover from the Appliance (4 screws) fig. 1.
3. Thread the cable(s) through the cable access hole at the base of the appliance.
4. Connect the spade connectors to the terminals marked "Remote Control" on the printed circuit board (fig. 2). Polarity is not important. Either wire colour can be connected to either terminal.
5. Replace cover of the Appliance. Ensure that the screw with the star washer is placed at the bottom right hand corner for earthing purposes.

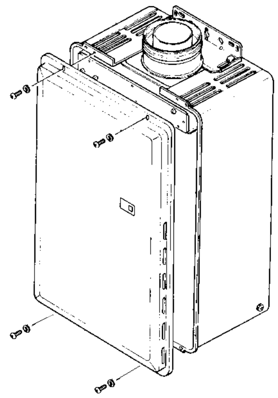


fig.1

Connecting Three Controllers

6. Isolate the power supply
7. Remove the front cover from the Appliance (4 screws) fig.1.
8. Thread the cables through the cable access hole at the base of the appliance.
9. Connect the 4 spade connectors to the terminals marked "Remote Control" on the printed circuit board (fig. 2). Polarity is not important. Either wire colour can be connected to either terminal.
10. Replace cover of the Appliance. Ensure that the screw with the star washer is placed at the bottom right hand corner for earthing purposes.

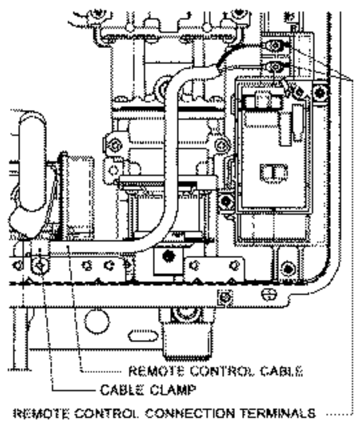


fig.2

Connecting Four Controllers

11. Isolate the power supply
12. Remove the front cover from the Appliance (4 screws) fig 1.
13. Cut the spade connectors from all four controller cables to be connected to the appliance (8 spade connectors should be cut off) and discard. Connect the wires from two cables and terminate into two new spade connectors as shown in (fig. 3).

Repeat for the remaining two cables. Spade connectors are available from your local electrical component retailer.

14. Thread the 4 cables through the cable access hole at the base of the appliance. Connect the 4 spade connectors to the terminals marked "Remote Control" on the printed circuit board (fig 2). Polarity is not important. Either wire colour can be connected to either terminal.
15. Replace cover of the Appliance. Ensure that the screw with the star washer is placed at the bottom right hand corner for earthing purposes.

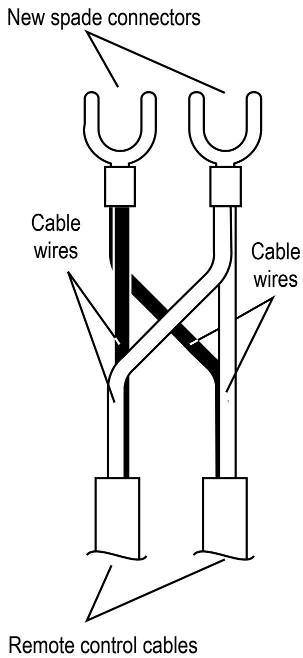


fig. 3

MC-91A Controller Programming

Question 1: Are four Controllers connected ?

IF YES: You will need to activate the fourth controller.

STEP 1:

For the Controller in the 'KITCHEN' only, press and hold the 'Transfer' and 'On/Off' buttons simultaneously (see fig. 1) until a 'beep' is heard (approximately 5 seconds).

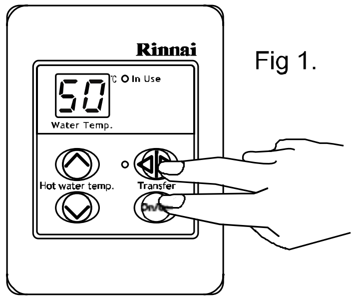
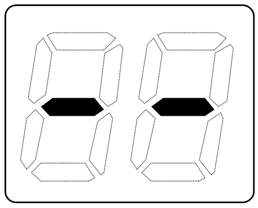


Fig 1.

STEP 2:

Check that the display on ALL FOUR controllers is lit and displaying a temperature when 'switched on'. If any ONE of the controller displays two dashes (see fig. 2) in the display repeat STEP 1.

This completes the activation procedure. Ignore Question 2.


Fig 2.

IF NO: (You have three controllers or fewer), go to Question 2.

Question 2: Does your kitchen controller temperature go higher than 50 deg C?

IF YES: No further action required.

IF NO: You will need to program the Kitchen controller to enable selection of temperatures higher than 50º C.

STEP 1:

For the controller in the KITCHEN only, press and hold the 'Transfer' and 'On/Off' buttons simultaneously (see fig 1.) until a 'beep' is heard (approximately 5 seconds).

STEP 2:

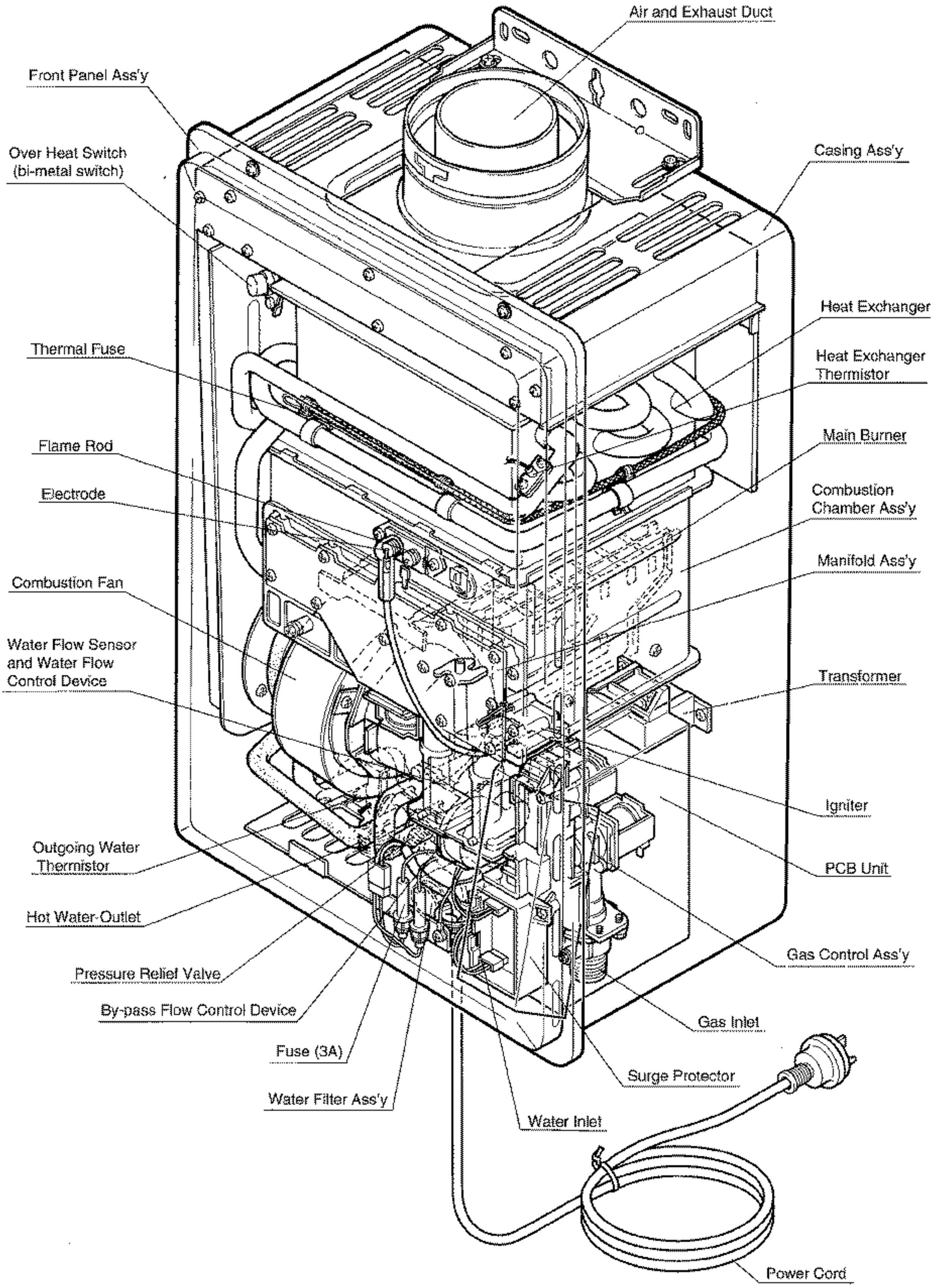
When the controller fitted in the KITCHEN is switched on, it should be possible to select temperatures higher than 50º C. If not, repeat Step 1.

Note:

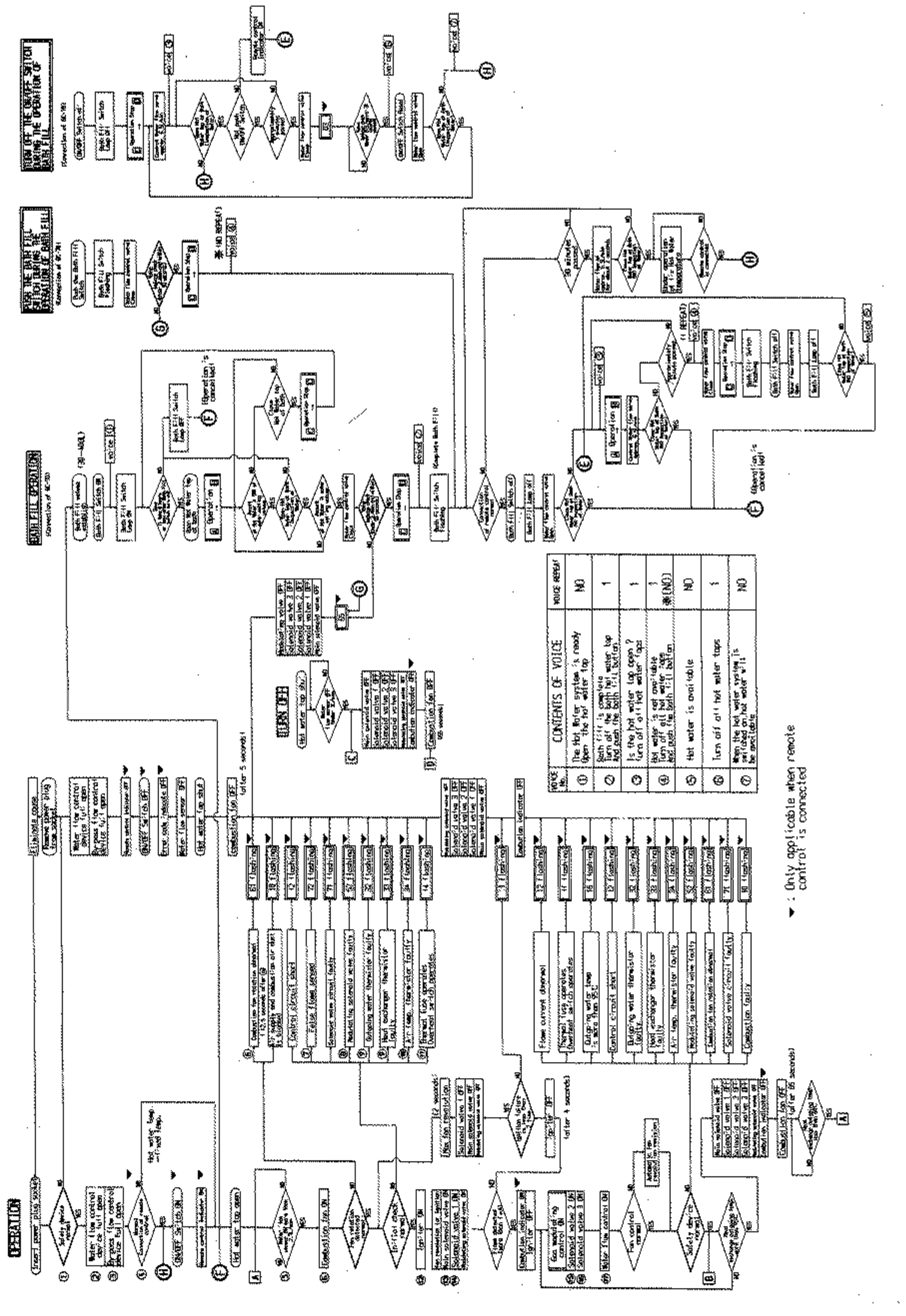
- If the kitchen controller is replaced, repeat STEP 1 above for the replacement controller.
- If the kitchen controller is swapped with another controller (for example, the controller fitted in a bathroom), repeat STEP 1 for the controller moved from the kitchen to the bathroom. Then perform STEP 1 for the controller moved from the bathroom to the kitchen.

6. Cutaway Diagram

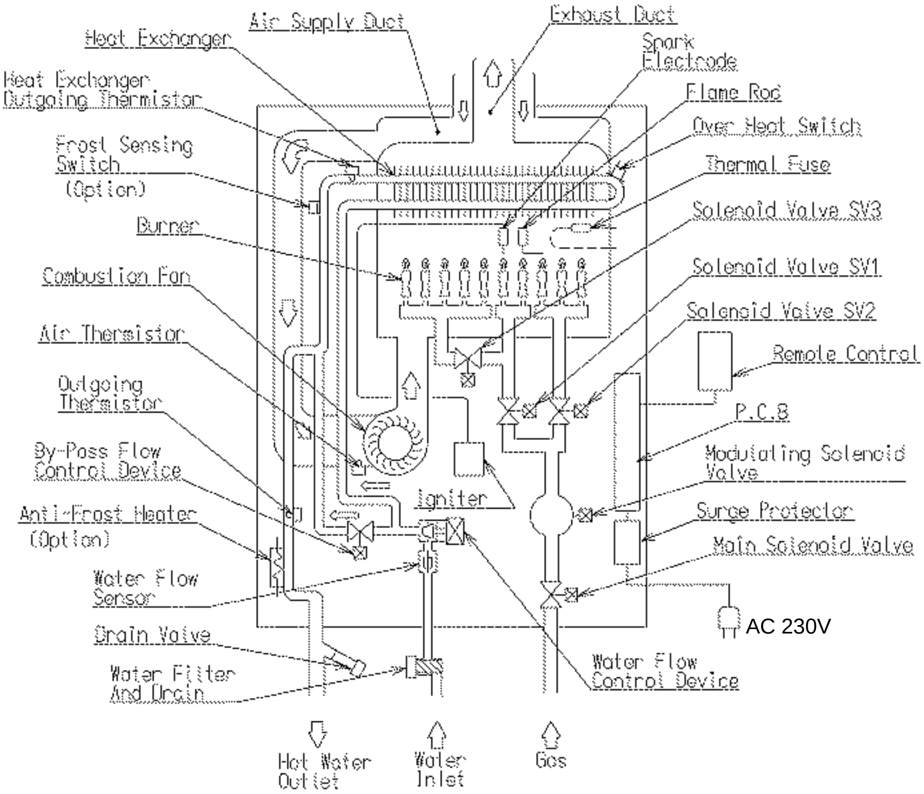
Infinity 26i and 50i



7. Operational Flow Chart



8. Operation Principles



Hot Water Operation

1. Ignition

- Activate controllers (if fitted) and open the hot water tap (for full details regarding operation of controllers refer to the 'installation and user manual.
- When water flows through the unit, the water flow sensor rotates and sends an electrical 'pulse' signal to the Printed Circuit Board (PCB). This signal is proportional to the water flow rate.
- The PCB sends electrical current to the combustion fan motor causing it to turn. The fan motor sends an electrical pulse signal to the PCB. If fan rotation is OK, the main solenoid and changeover solenoid valves open as required, the spark generator activates and the spark electrode ignites the burner.

2. Water Temperature / Flow Control / Volume Control

- The PCB will automatically control operation of the internal components to achieve the programmed temperature. When a high temperature rise is required, the PCB may cause the Water Flow Servo to close partially resulting in a lower flow rate to achieve the programmed temperature. This is a necessary operational feature of the unit.
- When operating in 'Bath Fill' mode, the signal from the water flow sensor is also used by the PCB to compute the volume of water that has been passed through the unit at any instant whilst the bath is filling.

3. Shut Down

- When operating in 'Bath Fill' mode, the PCB causes the Water Flow Servo to close when the programmed Bath Fill volume has passed through the unit. Alternatively, flow is stopped when the user closes the hot water tap.
- When water flow stops, the water flow sensor stops rotating and the pulse signal to the PCB stops. The PCB then causes the main solenoid and solenoid valves to close and the burner is extinguished. The combustion fan will continue to operate for some time to purge the combustion chamber.

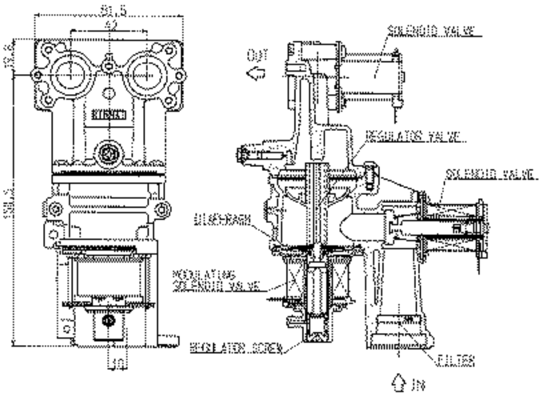
9. Main Components

1) Printed Circuit Board

- The Printed Circuit Board controls all operational functions including Air Supply Control, Gas Control, Water Flow Measurement, Water Flow Control, Combustion System and all sensors and safety devices.

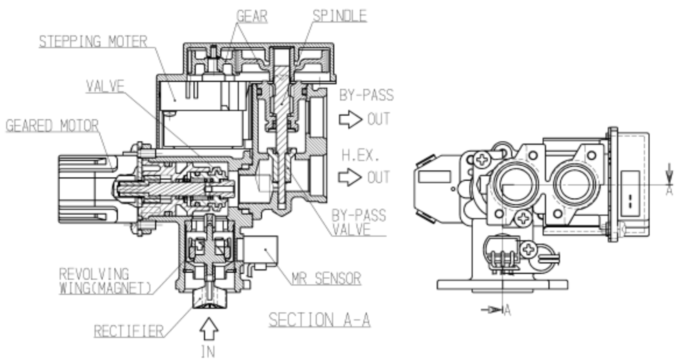
2) Gas Flow Control

- During normal operation, the PCB keeps the main solenoid valve open whilst there is flow through the unit and the burner needs to be lit.
- Gas flow rate is controlled by the modulating valve assembly and three changeover solenoid valves to always ensure constant outlet water temperature, regardless of flow rate or incoming water temperature.
- The modulating valve is electronically controlled by the PCB using signals from the water flow sensor, water flow control device, bypass flow control device, water temperature thermistors and combustion fan speed sensor. The modulating valve directs gas to the three changeover solenoid valves.
- The three changeover solenoid valves direct gas to each of the three burner banks independantly. Any one, two or all of the solenoid valves may be open during operation.
- Gas flow is modulated between 4.4 and 54 kW by a combination of the modulating valve and changeover solenoid positions.
- The maximum gas rate is predetermined and the appliance cannot be overloaded when correctly installed.



3) Water Flow Control

- Water flow is detected by a turbine coupled to a magnetic pulse generating device.The magnetic pulses are detected and counted by the PCB.The PCB calculates the exact water flow from the frequency of pulses generated by the turbine, as well as the volume of water that has passed through the unit at any instant during ‘Bath Fill’ operation. A minimum flow rate of 2.4 l/min is required for the burner to ignite.
- Water flow control is achieved through the use of servo driven water flow and bypass valves.Both servo motors are controlled by the PCB.The ‘Water Flow Valve’ restricts the flow of water into the heat exchanger assembly if the programmed temperature cannot be achieved. Also, when the Bath Fill function is activated, flow of water is stopped when the bath is full. During normal operation, cold water from the inlet valve is mixed with hot water from the heat exchanger outlet.The ‘Bypass Valve’ mixes the correct proportion of cold and hot water to ensure accurate hot water delivery temperature over the available range of flow rates. The water flow and bypass valves are a combined assembly on the cold water inlet of the appliance.



4) Air Supply Control

- Air for combustion is supplied by a centrifugal fan driven by a variable speed DC motor. The voltage to the motor is determined by the PCB based on water flow, delivered water temperature and programmed water temperature. The actual fan speed is monitored by a magnetic pulse counter. This counter emits a signal to the PCB. From the voltage supplied to the DC motor and the fan speed signal, the PCB determines whether an error condition exists with the fan.

5) Combustion System

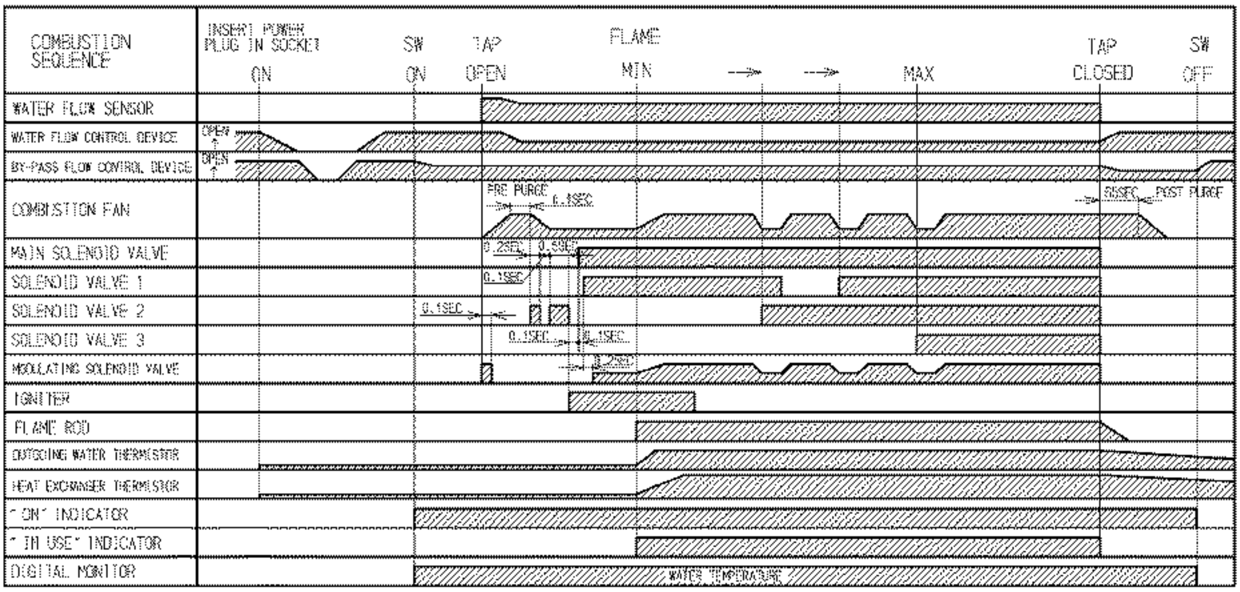
The combustion chamber is housed within the heat exchanger assembly and comprises:

- A three chamber aluminium alloy manifold with a total of 44 integral injectors, arranged in two rows of twenty two. The middle chamber houses eight injectors, the left chamber, twelve, and the right chamber, twenty four injectors. Gas flow to each chamber is controlled by an electronic solenoid valve (refer ‘Gas Flow Control’ above).
- A burner assembly comprising twenty two identical modular stainless steel bunsen burners secured by an aluminised steel framework. The manifold is attached to the front of the burner module. Each bunsen burner is supplied by two injectors.
- A combustion chamber. Integrated into the combustion chamber front panel are the flame rod and two ignition electrodes.

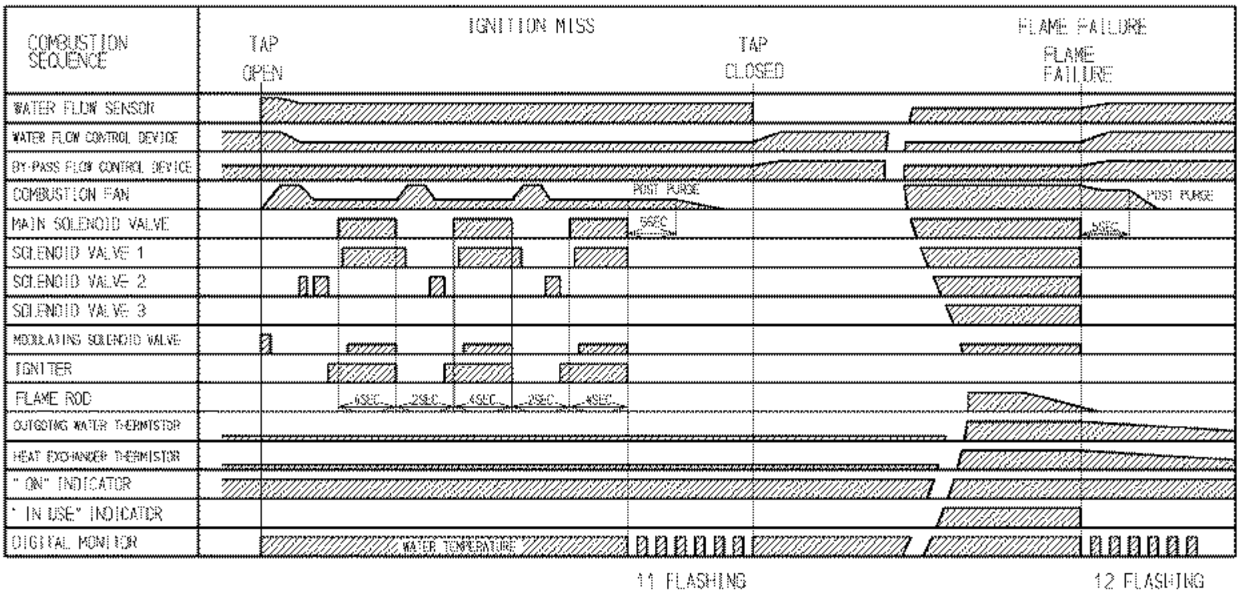
10. Time Charts

Infinity 26i and HD 50i

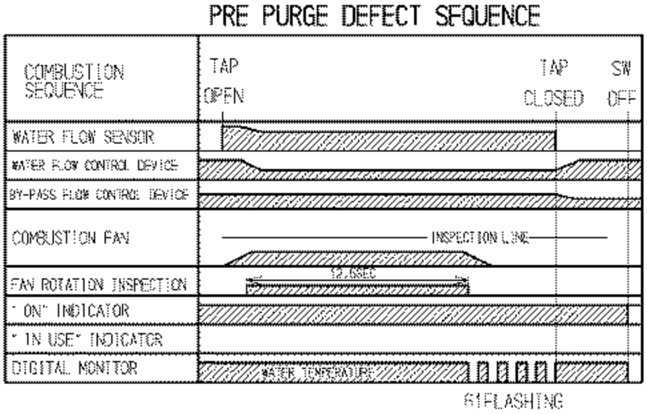
NORMAL COMBUSTION SEQENCE



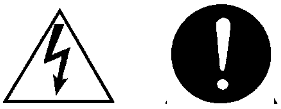
ERROR SEQUENCE (IGNITION/FLAME FAILURE)

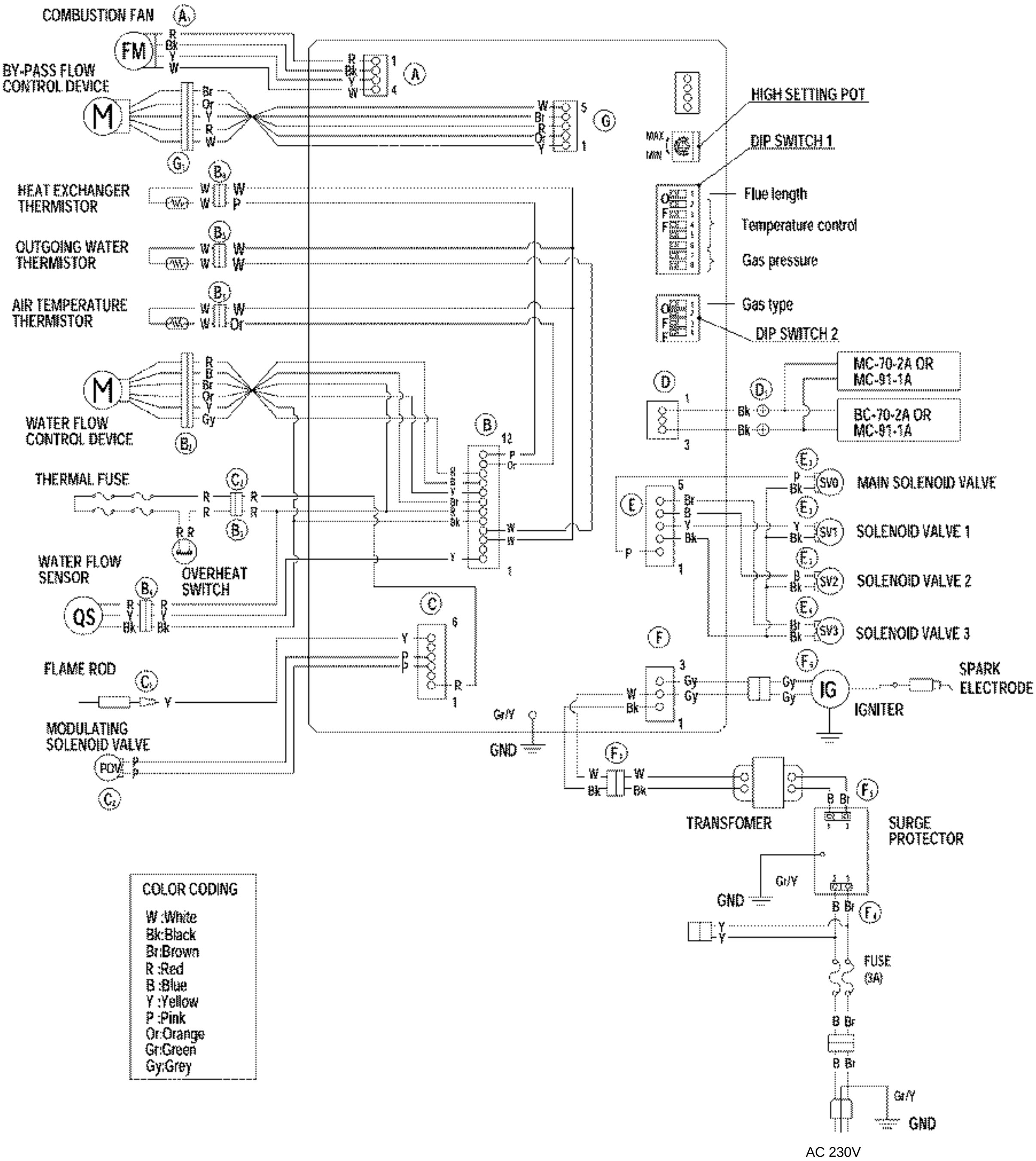


PRE PURGE DEFECT SEQUENCE



11. Wiring Diagram

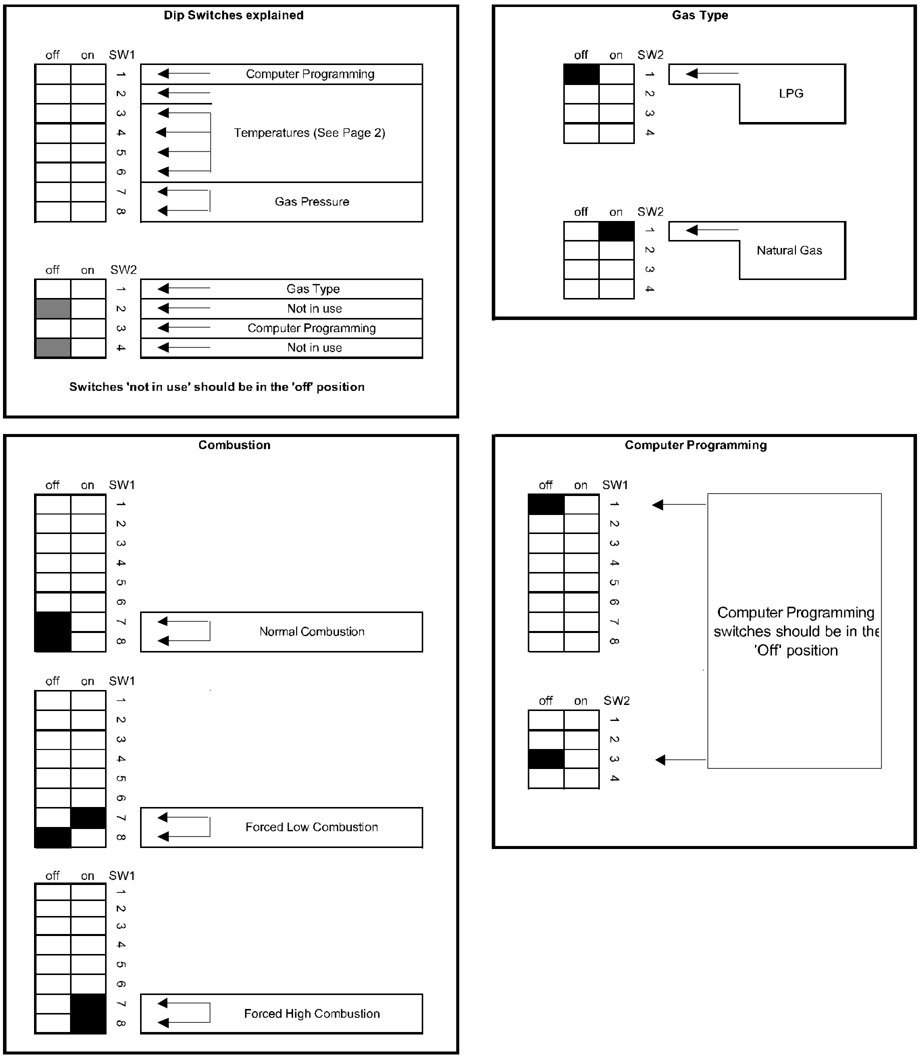




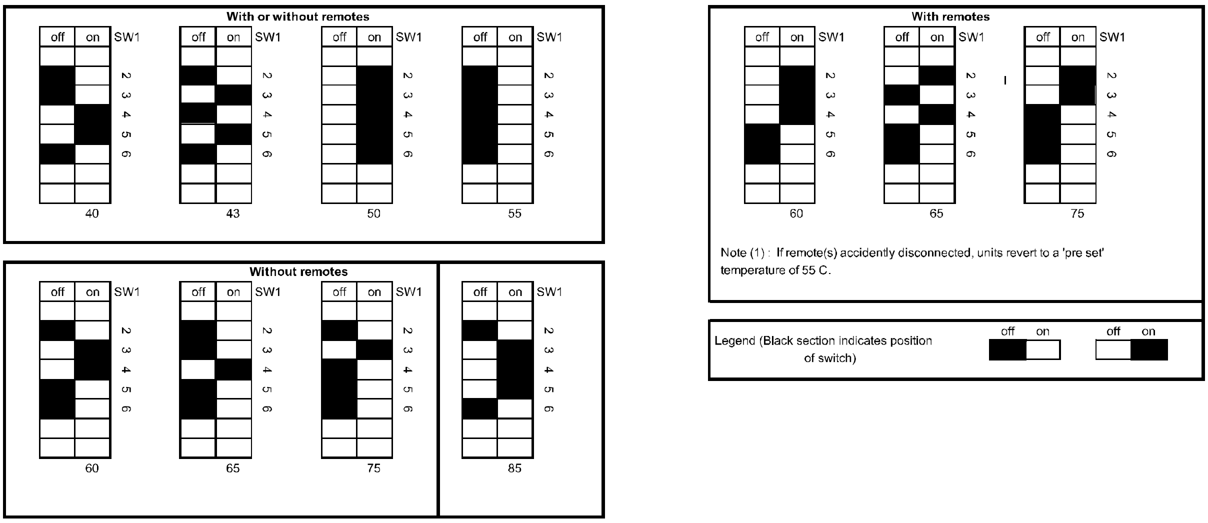
12. Dip Switch Settings

WARNING: Dip Switch settings must only be changed by an authorised person.

Dip Switch Settings for Infinity 26i and HD50i



Dip Switch Settings for Infinity 26i and HD50i

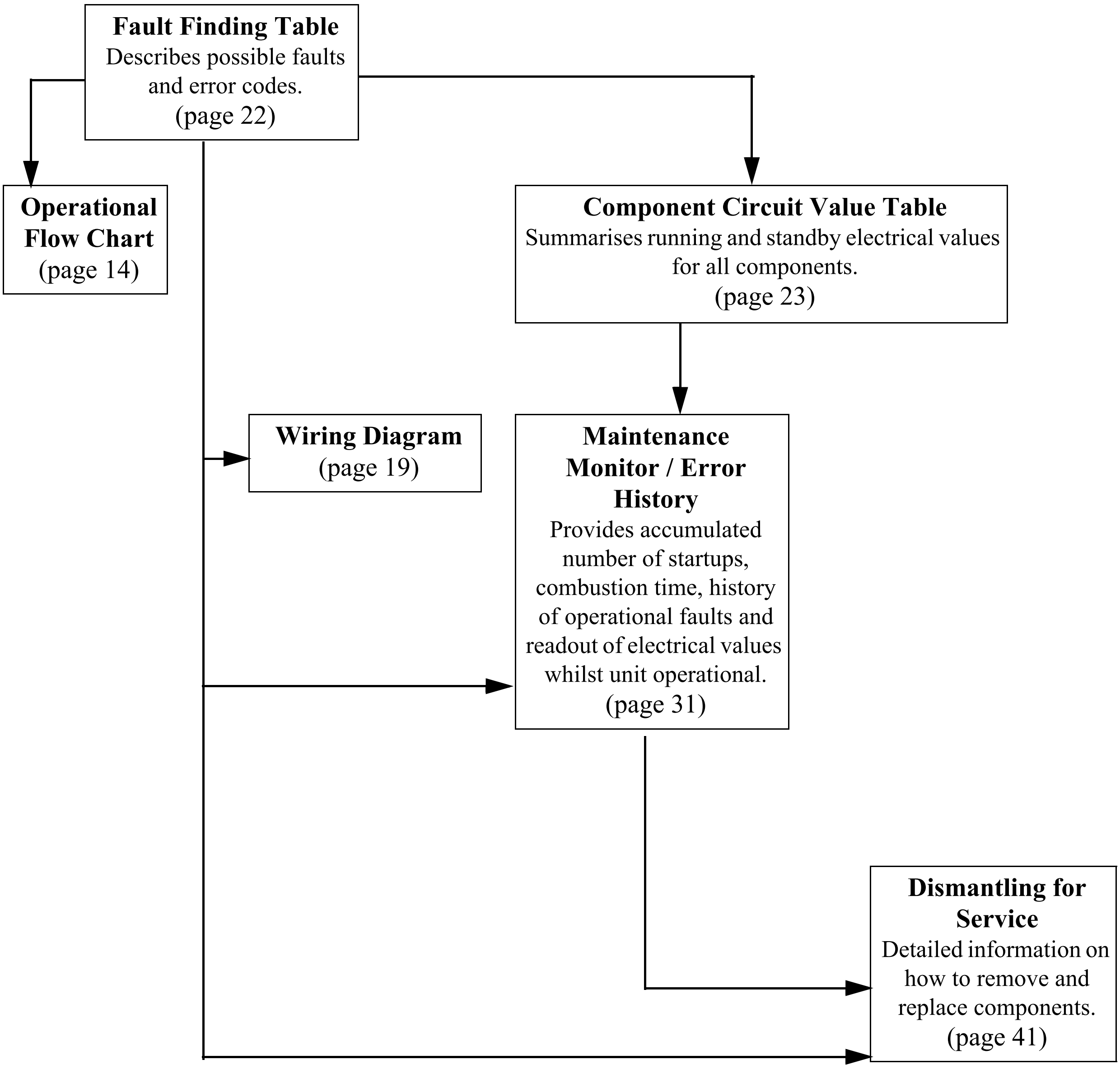


13. Fault Finding



If there is a fault with the appliance, and controllers are installed, a numerical fault code may appear on the digital display controller. If controllers are not installed, one may be fitted to find out the fault code. Fault finding without controllers (and thus fault codes) is possible but more time consuming.

To diagnose and rectify faults, the **Fault Finding Table** is used as illustrated below:



Fault Finding Table

Code on Controller	Fault	Table	Action
03	Power interruption during Bathfill. Water will not flow when power restored.		1. Turn off all hot water taps.
			1. Press the ON/OFF button on a controller twice.
10	Combustion fan current too high. Unit operates, then stops.	E	1. Check blockage of air intake/flue outlet.
			2. Check combustion fan.
11	No ignition. Unit stops without flame igniting		1. Check gas supply
		C	2. Check sparker unit
			3. Check gas valves
12	Flame Failure / Earth Leakage		1. Check gas supply
			2. Check flame rod
			3. Check earth wire lead
			4. Check remote control
14	Thermal fuse and/or overheat switch activated. Unit operates, then stops.		1. Check thermal fuse
			2. Check overheat switch
			IMPORTANT- If thermal fuse or overheat switch were faulty : a. Check heater for damage b. Confirm “Gas Type” and “Combustion” dip switch settings (page 20) c. Confirm test point pressures (page 26).
16	Over temperature warning. Unit operates, then stops.		1. Confirm “Gas Type” and “Combustion” dip switch settings (page 20)
			2. Confirm test point pressure (page 26)
		C	3. Check gas valves
		D	4. Check water flow sensor
		B	5. Check water flow servo
		A	6. Check heat exchanger outlet temperature thermistor
			7. Check hot water outlet temperature thermistor
32	Outlet water thermistor flow	A	Check hot water outlet thermistor
33	Heat exchanger thermistor error	A	Check heat exchanger thermistor
52	Modulating solenoid valve fault. Unit stops without flame ignition.	C	Check modulating solenoid valve
61	Combustion fan rotation error	E	Check combustion fan
65	Water flow control device error. Water flow is not controlled. Water temperature too low.	B	Check water flow servo
71	Solenoid valve circuit error. Unit does not operate.	C	Check gas valves
72	Flame rod circuit error. Unit does not operate.		Check flame rod
-	Appliance does not operate at all. No display on the remote controllers (if fitted).		1. Check power cord plugged in and supply turned on.
			2. Check power supply voltage.
			3. Check electrical fuse.
			4. Check transformer.
		C	5. Check gas valves
			6. Check sparker unit.
			7. Check earth leads and connections.
			8. Check for short circuits.
			9. Check remote controller(s) - if fitted.
-	No combustion despite remote control indicating that combustion is occuring - if remote controller(s) fitted.	D	1. Check water flow sensor.
			2. Check flame rod.
		A	3. Check heat exchanger outlet thermistor.
		A	4. Check hot water outlet thermistor.
		E	5. Check combustion fan.
			6. Check the sparker unit.
		C	7. Check gas valves.
			8. Check thermal fuse.
			9. Check overheat switch.
			IMPORTANT - If thermal fuse or overheat switch were faulty: a) check heater for damage; b) confirm “Gas Type” and “Combustion” dip switch settings; c) confirm test point pressure.
-	Combustion stops during operation.		1. Check gas supply
			2. Check flame rod
			3. Check earth leads and connections.
-	Cannot adjust the hot water temperature via the controller(s) - only if controller(s) fitted.	A	1. Check hot water outlet thermistor.
			2. Check heat exchanger outlet thermistor.
		C	3. Check gas valves
		B	4. Check water flow servo.
			5. Check bypass servo.
-	Anti-frost heater does not operate.	F	1. Check anti-frost heater components
			2. Check frost sensing switch

14. Component Circuit Value Table

Table Reference	Component	Measurement Point		Normal Value	A Note
		CN	Wire Colour		
	Surge Protection	F_5	B-Br	AC207~264V	
B	Water Flow Control Device	B_2	R-B	DC11~13V	Operate Electricity
			Gy-Or	DC11~13V	Control Electricity
			Gy-Y	Below DC1V (Limiter On)	Full Open Position
				DC4~6V (Limiter Off)	
			Gy-Br	Below DC1V (Limiter On)	Full Close Position
				DC4~6V (Limiter Off)	
	By-Pass Flow Control Device	G_1	Br-W Or-W	DC2~6V	Operate Condition
			Y-W R-W GND	15~35Ω	
	Remote Control	D_1	Bk-Bk	DC11~13V	
D	Water Flow Sensor	B_4	R-Bk	DC11~13V	
			Y-Bk GND	DC4~7V (Pulse 17~460Hz)	
E	Combustion Fan	A_1	R-Bk	DC6~45V	
			Y-Bk	DC11~13V	
			W-Bk GND	DC5~10V (33~400Hz)	
	Flame Rod	C_1	Y-BODY EARTH	AC5~150V	After Ignition
			Y-FLAME ROD	Over DC1μA	Flame Condition
C	Modulating Valve	C_2	P-P	DC2~15V 67~81Ω	
A	Outgoing Thermistor	B_5	W-W	15° C··· 11.4 ~14.0kΩ 30° C··· 6.4 ~ 7.8kΩ 45° C··· 3.6 ~ 4.5kΩ 60° C··· 2.2 ~ 2.7kΩ 100° C··· 0.6 ~ 0.8kΩ	
	Heat Exchanger Outgoing Thermistor	B_6			
	Air Thermistor	B_1	W-W		
	Thermal Fuse	B_3 C_3	R-R	Below 1Ω	
	Igniter	F_6	Gy-Gy	AC90~110V	
C	Main Solenoid Valve	E_1	P-Bk	DC80~100V 1.7~2.1kΩ	
	Solenoid Valve 1	E_2	Y-Bk	DC80~100V 1.7~2.1kΩ	
	Solenoid Valve 2	E_3	B-Bk	DC80~100V 1.7~2.1kΩ	
	Solenoid Valve 3	E_4	Br-Bk	DC80~100V 1.7~2.0kΩ	
	Transformer	F_5	B-Br	16~18Ω	
		F_7	W-Bk	AC90~110V	
F	Valve Heater	F_3		50~56kΩ	
	Valve Heater and Square Heater	F_2	Y-Y	444~510kΩ	
		F_3	Y-Y		

Component and Circuit Checks



1. Combustion Fan Circuit

Check the Motor

Check the combustion fan if the error indicator displays "61".

Measure voltages between Black and Red of the PCB connector (A_1).

Normal: DC6~45V (when fan ON)
DC0V (when fan OFF)
If normal proceed to check the rotation sensor
Faulty: Replace PCB

Check for the Fan Rotation Sensor

a.) Measure voltages between Black and Yellow of connector (A_1).
Normal: DC11~13V
If normal proceed to b.).
Faulty: Replace PCB.

b.) Measure voltages between Black and White of connector (A_1).
Normal: DC5~10V
If normal proceed to Sparker Circuit 2.
Faulty: Replace Combustion Fan.

2. Sparker Circuit

a.) Measure voltages between Grey and Grey of connector (F_6).

Normal: AC90~110V
If normal, proceed to b.).
Faulty: Replace PCB.

b.) Disconnect connector (J_6) and measure resistance between both terminals of the sparker.

Normal: 1MΩ
If not sparking, adjust or replace ignition plug.
Faulty: Replace Sparker.

3a.Main Solenoid Valve (SV_0) Circuit

Check the main solenoid if error indicator “11” is displayed.

a.) Disconnect Main Solenoid connector (E_1) and measure resistance between Pink and Black

Normal: 1.7~2.1kΩ
If normal, proceed to b.).
Faulty: Replace Main Solenoid.

b.) Measure voltage between Pink-Black of Main Solenoid connector.

Normal: DC80~100V
If normal, proceed to Solenoid Valve SV_1 (E_2)
Faulty: Replace PCB.

3b.Solenoid Valve 1 (SV_1) Circuit

Check Solenoid 1 if error indicator “11” is displayed.

a.) Disconnect Solenoid 1 connector (E_2) and measure resistance between Yellow and Black.

Normal: 1.7~2.1kΩ
If normal, proceed to b.).
Faulty: Replace Solenoid 1.

b.) Measure voltage between Yellow and Black of Solenoid 1 connector.

Normal: DC80~100V
If normal, proceed to Solenoid Valve 2 (SV_2) Circuit
Faulty: Replace PCB.

3c. Solenoid Valve 2 (SV_2) Circuit

a.) Disconnect Solenoid Valve 2 connector (E_3) and measure resistance between Blue and Black.

Normal: 1.7~2.1kΩ
If normal,, proceed to b.
Faulty: Replace Solenoid Valve 2.

b.) Measure voltage between Blue and Black of Solenoid Valve connector.

Normal: DC80~100V
If normal, proceed to Thermal fuse Circuit.
Faulty: Replace PCB.

3d.Valve Circuit

a.) Disconnect Solenoid connector (E_4), measure resistance between Brown and Black.

Normal: 1.7~2.0kΩ
If normal, proceed to b.).
Faulty: Replace Solenoid Valve 3.

b.) Measure voltage between Brown and Black of SV_3 connector.

Normal: DC80~100V
If normal, proceed to Modulating valve circuit.
Faulty*:* Replace PCB.

c.) Disconnect Modulating Valve fasten terminal and measure resistance between terminals.

Normal: 67~81Ω
If normal, proceed to b.).
Faulty*:* Replace Modulating Valve.

d.) Measure voltage between Pink and Pink of Modulating Valve fasten terminal.

Normal: DC2~15V
If normal, proceed to c.).
Faulty: Replace PCB.

e.) Check the gas secondary pressure change when set temperature on the remote control changes from 37 to 55°C.
Normal: If secondary pressure changes, go to Water Flow Servo Circuit.
Faulty: Replace Modulating Valve.

4. Flame Rod Circuit

Check flame rod.

Disconnect flame rod terminal (C_1), and re-operate.

"72" indicated:- Proceed to 3.
"72" is not indicated:- check for electrical leaks from the flame rod.

Measure resistance between flame rod terminal (C_1) and appliance earth.

Normal: >1MΩ
If normal, replace PCB.
Faulty: Replace flame rod.

a.) Remove the Flame Rod terminal (C_1) repeat operation procedure, if 72 is displayed again check the Hot water outlet thermistor.
If 72 is not displayed check current leakage from the Flame Rod.

b.) Measure voltage between body earth and Flame Rod terminal (C_1).

Normal: Voltage AC5~150V
If normal, replaced PCB
Faulty: Replace Flame Rod.

c.) Check if the Flame Rod is securely fitted.

Normal: replace the PCB
Faulty: Adjust the fitting of the Flame Rod

4. Earth Lead

Confirm the Earth Lead connection is secure (at round terminal), and check for broken or short circuits in the lead.

If normal, check other possible causes for flame failure (is gas valve open?, is the filter blocked? etc.).
If faulty, tighten the earth lead, PCB, power cord and surge arrester.

5. Thermal Fuse Circuit

Check the Thermal Fuse.

Disconnect relay connector (F_1) measure resistance between Red and Red.

Normal: < 1Ω
If normal, replace PCB.
Faulty: Replace Thermal Fuse if after confirming there is no damage to the appliance.

6. Overheat Switch Circuit

Measure resistance between Overheat Switch terminals.
Normal: < 1Ω
If normal, replace PCB.
Faulty: Replace Overheat Switch.

Note: If Thermal fuse or Overheat Switch were faulty.

a.) Check heater for damage

b.) Confirm gas type and combustion dipswitch settings

c.) Confirm test point pressure.

7. Water Flow Sensor

a.) Measure voltage between Red - Black of relay connector (B_4).

Normal: DC 11~13V
If normal, proceed to b.
Faulty: Replace PCB.

b.) Measure voltage between Yellow - Black of relay connector (B_4).

Normal: DC 4~7V
If normal, proceed to 2).
Faulty: Replace water flow sensor.

Note: For controller readout of water flow whilst operational refer maintenance monitor. (Chapter 17 No. 1).

8. Water Flow Servo Circuit

a.) Disconnect relay connector (B_2), and measure resistance between Red and Blue on water flow servo.

Normal: 10~30Ω
If normal: proceed to b.).
Faulty: Replace Water Flow Servo and Water Flow Sensor.

b.) Disconnect relay connector (B_2), and measure voltage between Orange (+) and Grey (-) on PCB unit side.

Normal: DC11~13V
If Normal: proceed to c.).
Faulty: Replace PCB unit.

c.) Measure voltage between Brown and Grey with relay connector (B_2) connected (with no water flowing, water flow servo fully open).

Normal: < DC4~6V
Faulty: Replace Water Flow Servo and Water Flow Sensor.

d.) Measure voltage between Yellow and Grey with relay connector (B_2) connected (with no water flowing, water flow servo fully open).

Normal: < DC1.0V
Faulty: Replace Water Flow Servo and Water Flow Sensor.

9. Heat Exchanger Outlet Thermistor Circuit

Check Heat Exchanger Thermistor if error code "33" is displayed.

Disconnect relay connector (B_6) and measure resistance between White -White.

Circuit break: Resistance >1MΩ
Short circuit: Resistance > 1 Ω
Normal: Check Heat exchanger outlet thermistor
Faulty: Replace heat exchanger outlet thermistor.

Note: For controller readout of thermistor temperature whilst operational refer maintenance monitor.

10. Hot Water Outlet Thermistor Circuit

Check Hot Water Thermistor if error code “32” is displayed.
Disconnect relay connector (B_5) and measure resistance White - White.

When disconnected: Resistance > 1 MΩ
When short circuit: Resistance > 1 Ω
Normal: Check Heat Exchanger Outlet Thermistor.
Faulty: Replace hot water outlet thermistor.

Normal

Temp.	15°C	30°C	45°C	60°C
Resistance	11.4~14 kΩ	6.4~7.8 kΩ	3.6~4.5 kΩ	2.2~2.7 kΩ

Note: For controller readout of thermistor temperature whilst operational refer maintenance monitor. (Chapter 17, No. 2).
Disconnect relay connector (E_1) and measure resistance White-White.

11.Surge Protector

Check the fuse.

a.) Unplug the power plug.

b.) Check whether or not the fuse (3A) x 2 has blown by measuring the resistance.

Normal: <1Ω
If normal go to step Electrical Fuse 13.
Faulty: Replace fuse/s (3Ax2). Check for a short next time it’s turned off.

12.Electrical Fuse

a.) Measure voltage between blue and brown on the connector (F_4)

Normal :AC 207~264V
If normal proceed to b.
Faulty: Check if voltage on the fuse terminal is AC207~264V

b.) Measure voltage between white and white on the (F_5).

Normal: AC207~264V.
Faulty: replace surge protecter unit.

13.Transformer

Check for the transformer

a.) Measure the voltage between red and red on the transmission connector (F_5).

Normal: AC207~264V
If normal proceed to b.).
Faulty: Check if the voltage on fuse terminals is 207~264V.

b.) Measure the voltage of the connector on the PCB.

Normal: Between Brown and Grey AC 30~50V
Between Yellow and Grey AC 180~220V
If normal, proceed to c.).
Faulty: Replace transformer.

c.) Measure voltage between White and Black of connector (F) on PCB.

Normal: AC 12~18V
If normal, proceed to 4.
Faulty: Replace transformer.

Note) The above transformer voltages are measured while the appliance is in standby mode - not while it is operating.

14. Bypass Servo Circuit 15.

a.) Disconnect relay connector (G_1) and measure resistance.

Normal

CN	Wire Colour	Value
G_1	Br - W O - W Y - W R - W^{GND}	15~35Ω

If normal, proceed to b.).
Faulty: Replace PCB.

b.) Measure working voltage while relay connector (G_1) is connected.

Normal

CN	Wire Colour	Value
G_1	Br - W O - W Y - W R - W^{GND}	DC 2~6V

Faulty: Replace Bypass Servo.

15.Remote Control

Check the voltage between the 2-core remote control cable.

Measure the voltage between terminals on the remote control terminal (D_1).

Normal: DC 11~13V
If normal, replace the remote control after confirming that the cable hasn't been damaged or shorted.
Faulty*:* Because normal voltage is not given due a short circuit, despite the PCB being in normal state, check Water Flow Servo circuit.
If solution is not given from the above replace PCB.

15. Maintenance Monitor / Error History

This feature is available where the appliances are connected with a deluxe controller (MC70 or BC70). This will enable service personnel to locate the maintenance history and faulty components, with the appliance in operation.

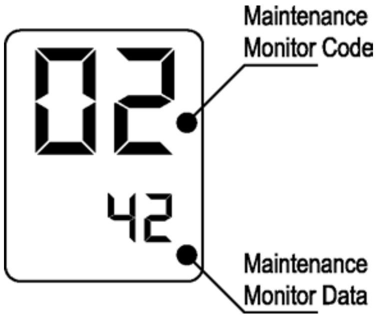
NB. When the maintenance information, error history is shown, use only one controller. If two or more remote controls are used at the same time, it may not operate correctly.

To display Maintenance Information

16. With the controller in the "OFF" position press the Water Temperature "DOWN" (Cooler) button while holding the "ON/OFF" button to activate the maintenance monitor. Press the "ON/OFF" button a second time to set the controller in the "ON" mode. This feature can now be used with the appliance in operation.

17. The maintenance number will be shown in the Water Temperature display.

18. Data will be shown in the Clock display.



19. To select the required maintenance number, press the Water Temperature "UP" and "DOWN" buttons.

    Note: Infinity 26i and HD50i use Maintenance Numbers 1-12.

Display Monitor Contents			
No.	Contents	Units	Data Range
01	Water flow sensor recognition flow (Example 123 = 12.3L/min).	0.1L/min	0~400
02	Hot water Outlet thermistor temperature (Example 20 = 20° C)	° C	0~999
03	Hot water combustion time (Example 6 = 600 hours)	100 hours	000~999
04	Hot water operation frequency (Example 6 = 600 Operations)	100	0~999
05	Hot water fan frequency	Hz pulses/sec	0~999 ***Note 1**

***Note 1** Fan Frequency rpm Conversion
(rpm) = (Hz) x15

06	Remote control connection	none	0 or 1 ***Note 2**

***Note 2** Remote Control Connections

Bathroom Remote

Additional remote Kitchen remote

“0 1 1”

Controls connected	Display
No	“0”
Yes	“1”

07	Water flow servo present recognising positioning	None	0~2 ***Note 3**

***Note 3** Water Flow Servo Positioning

Servo Position	Open	Centre	Closed
Display	**“1”**	**“0”**	**“2”**

08	Inlet water temperature (PCB recognition value) (Example 25 = 25 °C)	°C	0~999
09	Hot water fan current flow value (Example 6 x 10 = 60 mA)	10 mA	0~999
10	Bath fill amount (this counts the litres during bath fill operation).	Litres	0~999
11	Heat exchanger exit thermistor temperature Example 55 = 55 °C)	°C	0~999
12	Bypass servo present recognition positioning (Example 0 = Closed 160 = Half open 320 = Open	Degrees	0~320

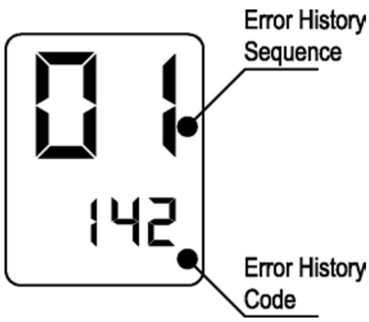
To return to normal operation

- Press the ON/OFF button again while holding down the Water Temperature "DOWN" (Cooler) button.

Error History

To Display Error Memory (History)

(This feature will show the last 10 faults in sequence)



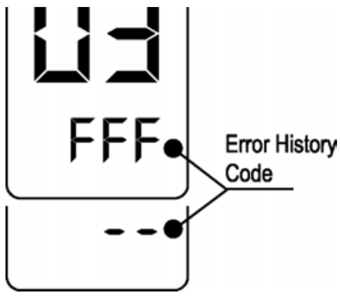
1. Turn off at the ON/OFF button. (This can be done during operation)

2. Press the ON/OFF button while holding the Water Temperature "UP" (Hotter) button.

- The Sequence will be shown in the Water Temperature display.

- Error Code will be shown in the Clock display. (See service Manual for error codes).

- Where there are less than a total of 9 errors, "FFF" or " - - " will be displayed in the Clock display.



To return to normal operation.

- Press the ON/OFF button again while holding the Water Temperature “UP” (Hotter) button.

- This feature will automatically shut down after 3 minutes.

16. Gas Pressure Setting Procedure



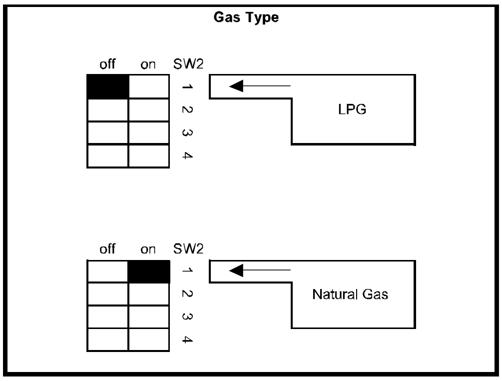
The regulator on the Infinity is electronically controlled and factory pre-set. Under normal circumstances it **does not** require adjustment during installation. Perform this procedure only if the unit is not operating correctly and **all** other possible causes for incorrect operation have been eliminated.

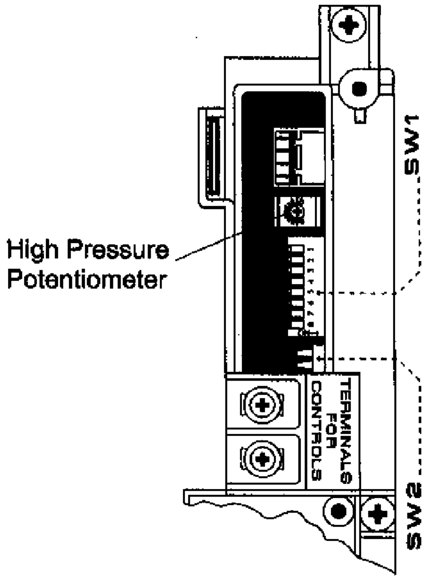
1) Turn 'OFF' the gas supply

2) Turn 'OFF' 230V power supply.

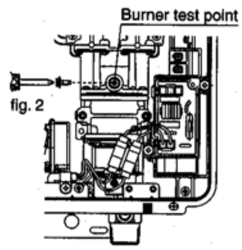
3) Remove the front cover from the appliance.

4) Check gas type switches (fig. 1) are in the correct position (top set or SW1 of switches).





5) Attach pressure gauge to burner test point. (fig. above right)



6) Turn 'ON' the gas supply.

7) Turn 'ON' 230V power supply.

8) If remote controllers are fitted, turn the unit 'ON' at the kitchen controller, select a delivery temperature of 55°C and open a hot water tap fully. (CAUTION: Ensure building occupants do not have access to hot water outlets during this procedure.

9) Set the Infinity to 'Forced Low' combustion by setting No. 7 dipswitch of the bottom (SW2) set of dip switches to 'ON'. (fig.3)

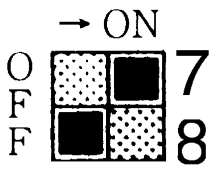


Fig. 3

10) Check the burner test point pressure.

11) Adjust the regulator screw on the modulating valve as required to the pressure below. (fig 4)

Pressure Setting low	
N.G.	1.9 mbar
Propane	2.3 mbar

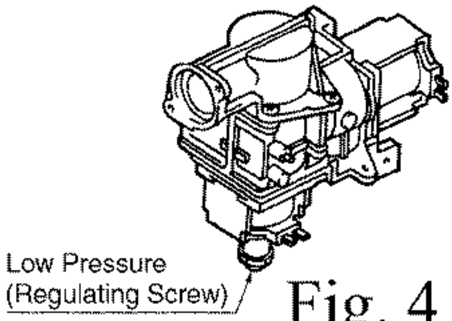


Fig. 4

12) Set the Infinity to 'Forced High' combustion by setting both No. 2 and No. 3 dipswitches of the bottom (SW2) set to 'ON'. (fig 5) Ensure maximum water flow.

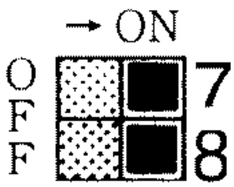


Fig. 5

13) Check the burner test point pressure.

14) Adjust the high pressure Potentiometer (POT) on the Printed Circuit Board (PCB). As required to the pressure shown.

Pressure Setting high	
N.G.	8.5 mbar
Propane	10.8 mbar

15) **IMPORTANT**: Set dip switches No's 2 and 3 on the bottom (SW2) set of switches to 'OFF' to return the appliance to 'Normal' combustion.

16) Close hot water tap.

17) Turn 'OFF' the gas supply and 230V power supply.

18) Remove pressure gauge, and replace sealing screw.

19) Turn 'ON' the gas supply and 230V power supply.

20) Operate unit and check for gas leaks at test point.

21) Replace the front cover of the appliance.



Warning

DURING PRESSURE TESTING OF THE INSTALLATION ENSURE GAS VALVE SITUATED BEFORE UNIT IS SHUT OFF.

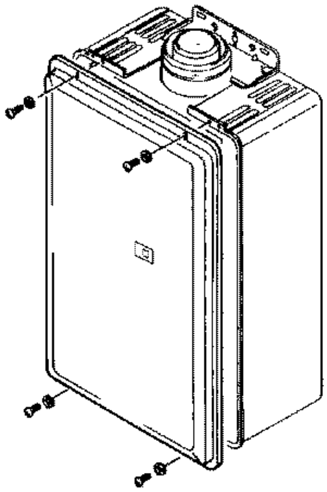
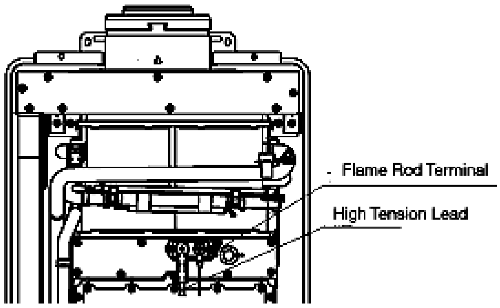
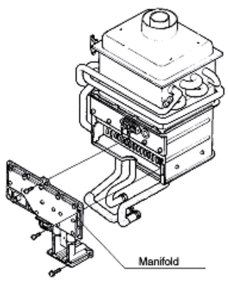
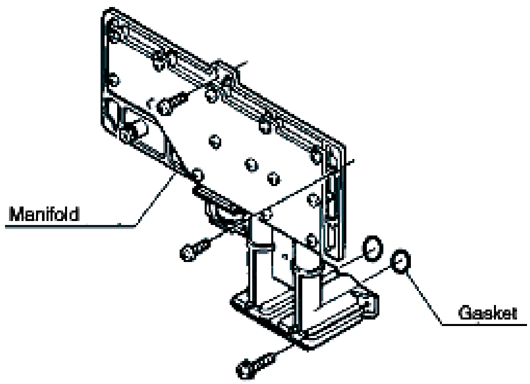
FAILURE TO DO SO MAY RESULT IN SERIOUS DAMAGE TO THE APPLIANCE AND POSSIBLE INJURY.

17. Gas Conversion Procedure

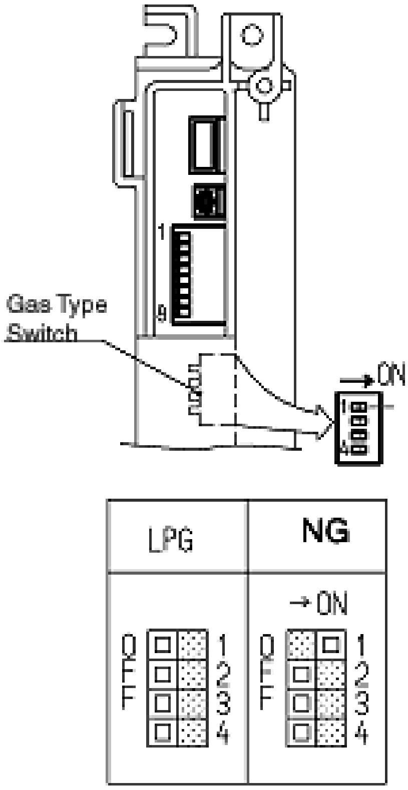


Gas Conversion Method

Tools required: Screw Driver and Digital Manometer

① Turn OFF main gas valve ② Disconnect 230V power supply ③ Remove Front Cover ④ Remove Remote Control	
Replacement of Manifold ① Remove Flame Rod Connection terminal ② Pull off high tension lead	
③ Remove Manifold assembly Screws (9) Manifold - Gas Control (3) Manifold - Burner (6) Clean combustion deposits on the burner if necessary	
④ Replace Manifold fit Gasket to Gas Control. For NG: U245-200-D 101-560-000 For Propane: U245-200-A 101-559-000	

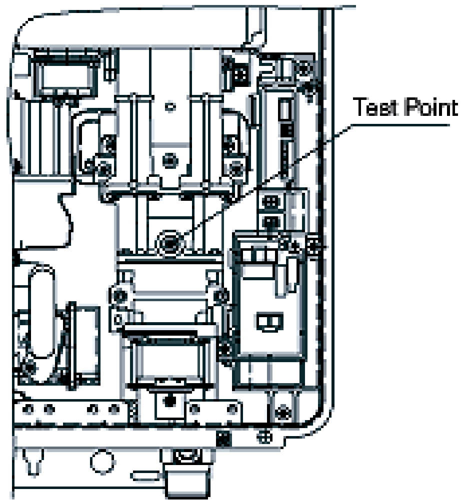
⑤ Change Gas Type Switch on PCB



Pressure Setting

① Remove pressure test point sealing screw from gas control

② Connect digital manometer with test point



③ Turn ON 230V power supply

④ Turn ON remote controller switch

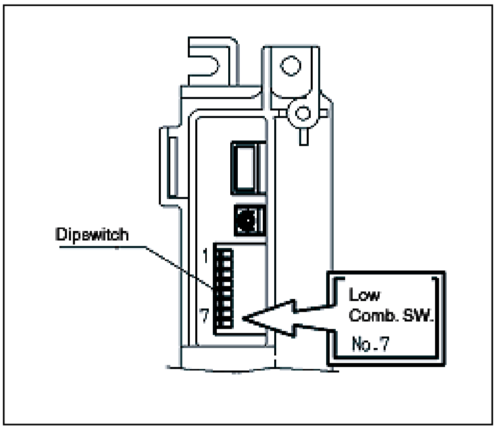
⑤ Turn ON main gas valve fully

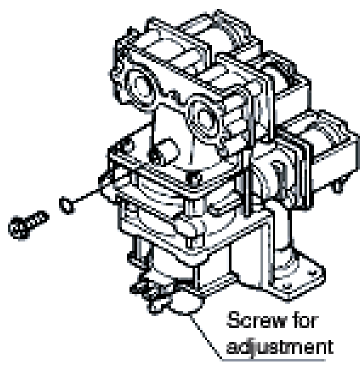
⑥ Change Dipswitch No. 7 for low combustion

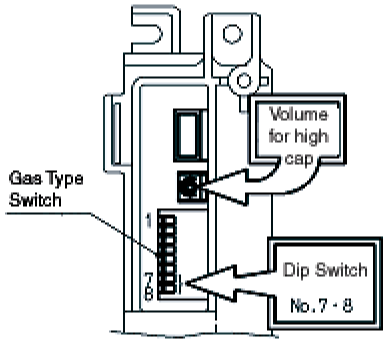
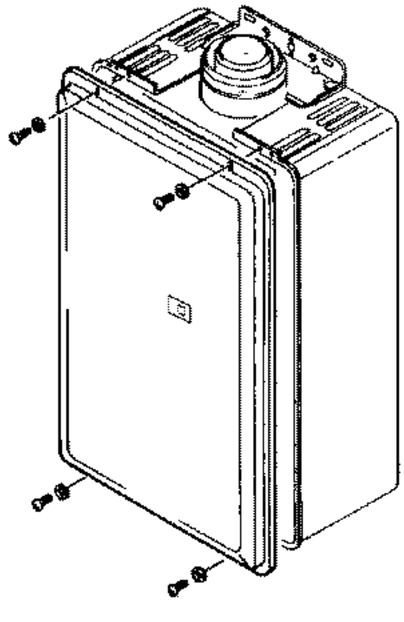
⑦ Turn ON outgoing water tap

⑧ Set pressure low with solenoid valve adjustment

	Low Capacity mbar
N.G.	1.9
Propane	2.3





⑨ Change Dipswitch No. 7 & 8 to ON for high combustion. ⑩ Set high capacity pressure with adjustment volume on PCB	
⑪ Return Dipswitch No. 7 & 8 to OFF position	
⑫ Turn OFF outgoing water tap ⑬ Disconnect 230V power supply ⑭ Fit pressure test point sealing screw ⑮ Check leakage from gas control, manifold connection and pressure point sealing screw	
⑯ Refit front cover ⑰ Turn ON 230V power supply	

	High Capacity mbar
N.G.	8.5
Propane	10.8

Anti Frost Heater Installation

Anti Frost Heaters come as standard on ALL Rinnai Infinity and Heavy Duty water heaters sold in the UK. They will not need to be installed on site.

The diagram on the following page shows where the elements are located.

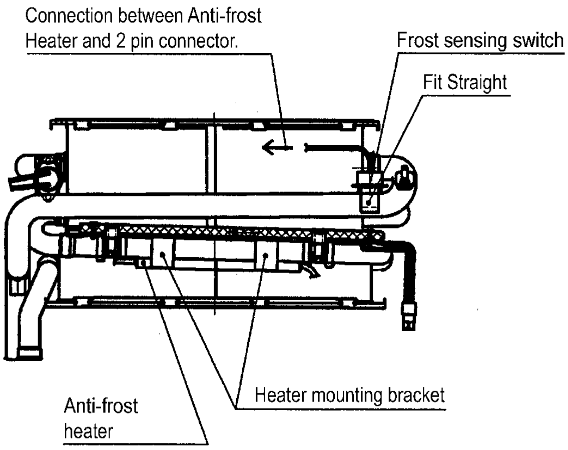


Diagram 1. (Front elevation)

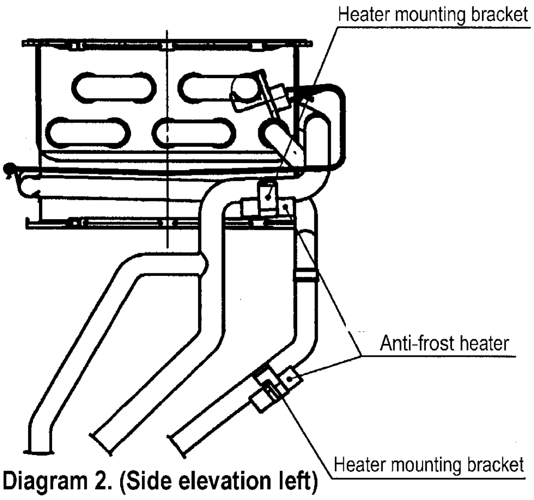


Diagram 2. (Side elevation left)

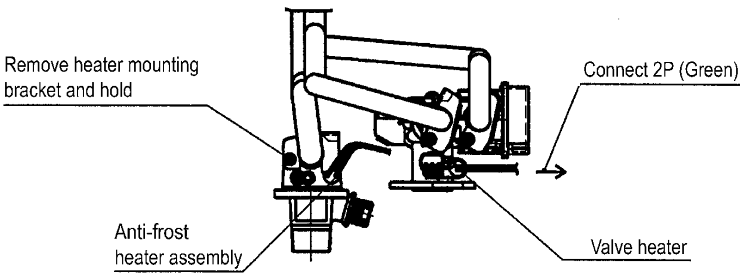


Diagram 3. (Front elevation "Lower")

18. Dismantling for Service



230 Volt potential exposure. Isolate the appliance and reconfirm with a neon screwdriver or multimeter.

Unless otherwise stated, re-assembly is the reverse of dismantling.

IMPORTANT

For some areas of dismantling you may need to isolate any or all of the following:
* Isolate gas supply.
* Disconnect electrical supply from wall socket.
* Isolate water supply.
* Drain **all** water from appliance.

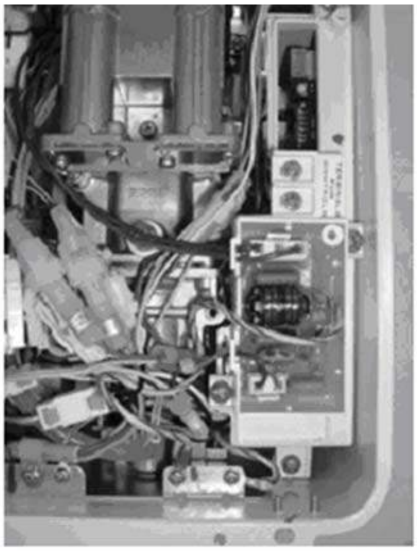
1) Removal of the **Front Panel**

a. Remove four (4) screws.



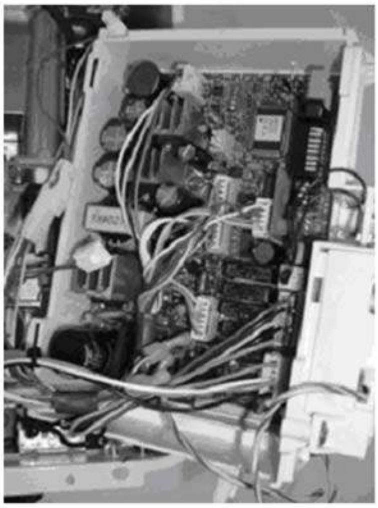
2) Removal of the **PCB Unit**

a. Remove the front panel. (Refer Item 1.)
b. Remove two (2) PCB unit fixing screws and pull out forward.



3) Removal of the **Water Flow Sensor, Servo and Bypass Servo**

a. Remove the front panel. (Refer Item 1.)
b. Remove two (2) screws and locking plates located on the water supply pipe and bypass pipe. Pull bypass pipe and water supply pipe forward to clear servo valves. Ensure O-rings are not lost or damaged.



4) Removal of the **Bypass Servo**

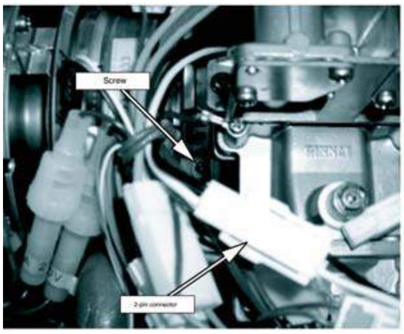
c. Remove two (2) screws from the water flow servo body, and pull the bypass servo out forwards. Ensure O-rings are not lost or damaged.



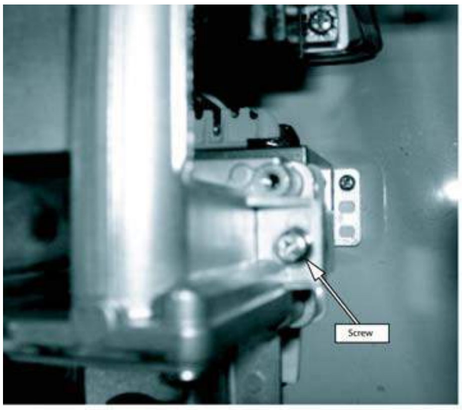
5) Removal of **Transformer**

a. Remove PCB (Refer to 2)

b. Remove 100 V harness and 2-pin connection



c. Removal Transformer



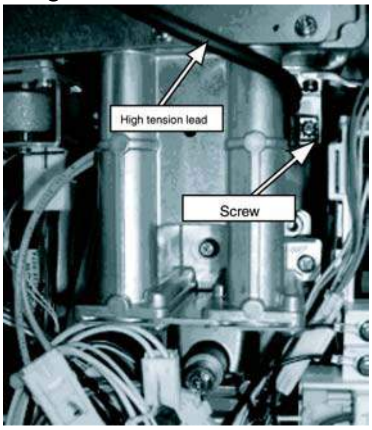


6) Removal of **Sparker**

a. Remove sparker

b. Remove 3 pin connector

c. Remove high tension cord



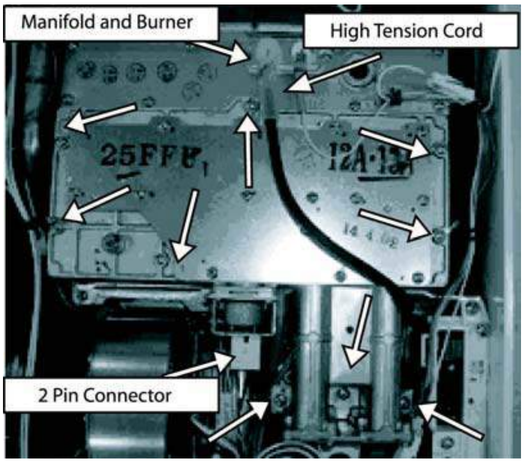


7) Removal of the **manifold and burner unit**

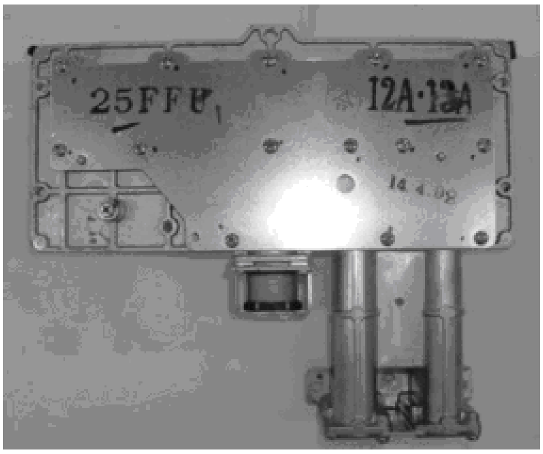
a. Remove high tension cord and flame rod.

b. Remove 2 pin connection of the solenoid valve

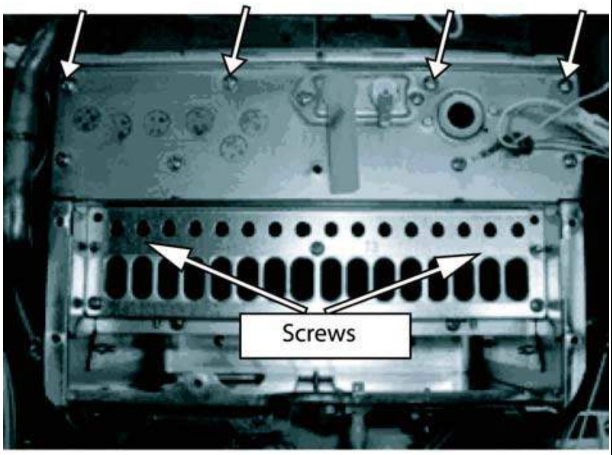
c. Remove manifold.



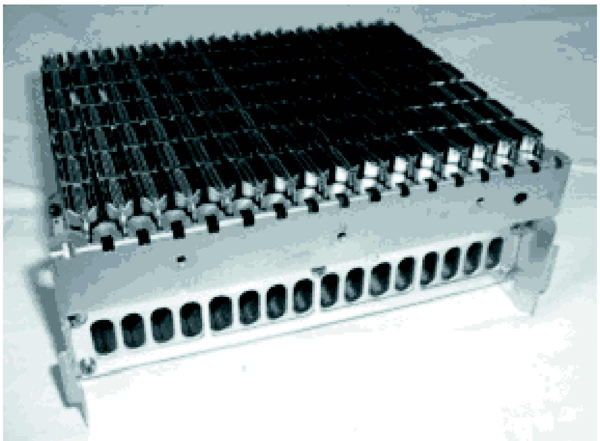
Manifold Assembly



a. Remove combustion chamber front panel.
b. Remove burner unit.

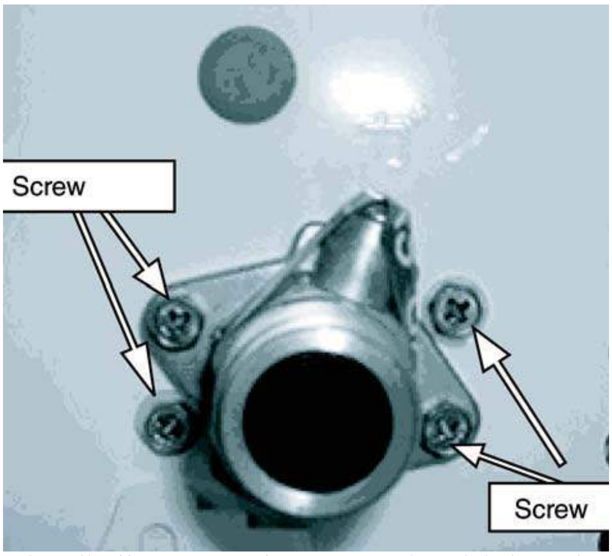


c. Pull off burner unit

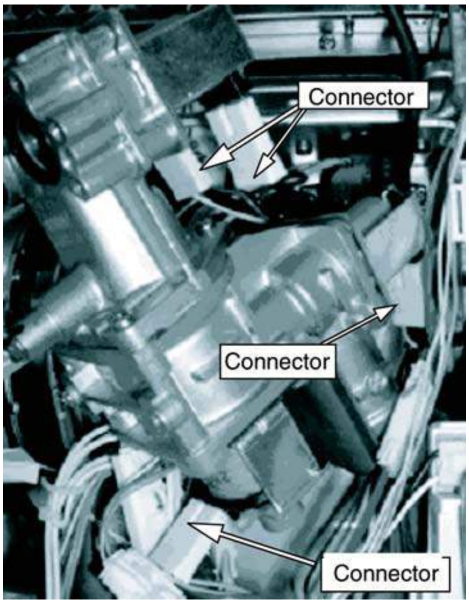


8) Removal of the **Gas Control**

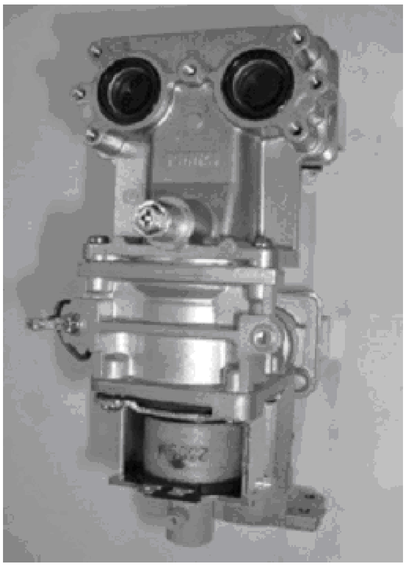
a. Remove manifold (refer to 5)
b. Remove back tube
c. Remove gas connection.



d. Pull off connectors for gas control modulation valve and solenoid valve.

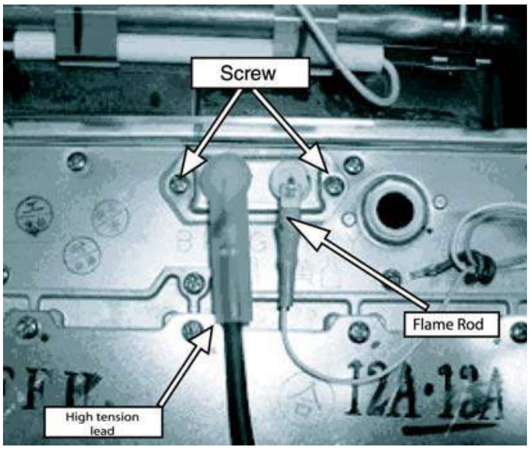


Gas Control

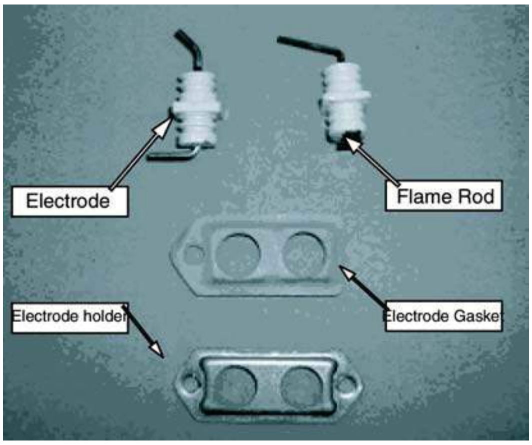


9) Removal of **Flame rod and spark plug**

a. Remove flame rod terminal and tighten span cord.
b. Remove flame rod and spark plug.

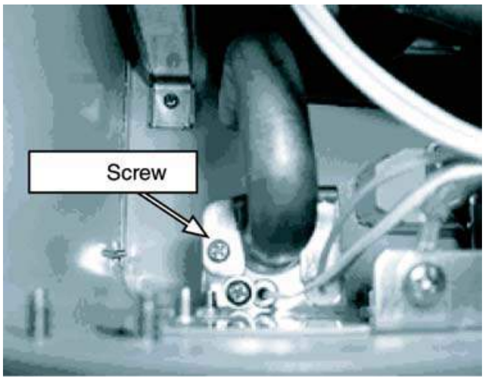


c. Remove of High Tension lead

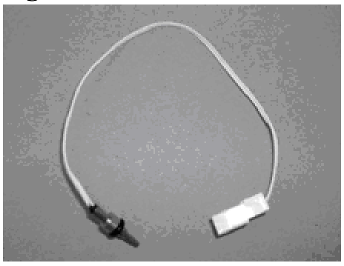


10) Removal of **outgoing water thermistor**

a. Remove thermistor fixing screw.
b. Remove 2 pin connection outgoing water thermistor

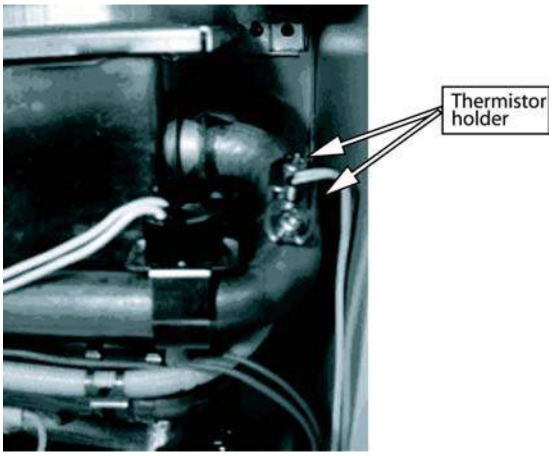


Heat Exchanger Thermistor



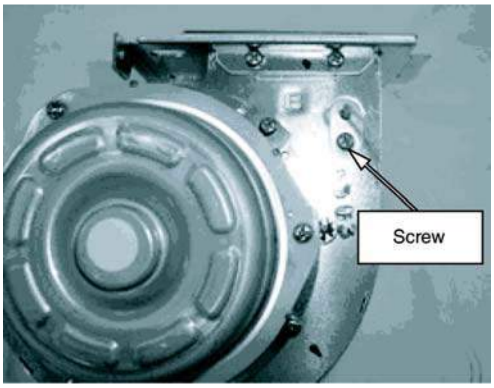
11) Removal of **heat exchanger thermistor**

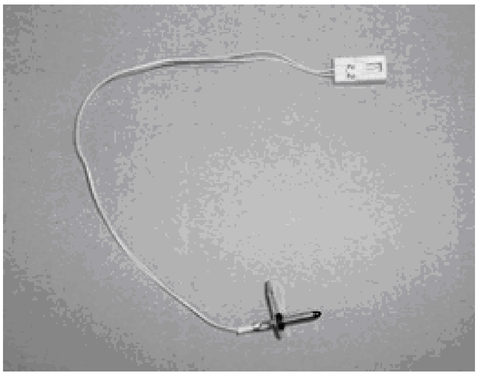
a. Remove thermistor holder
b. Remove 2 pin connector



12) Removal of **air intake thermistor**

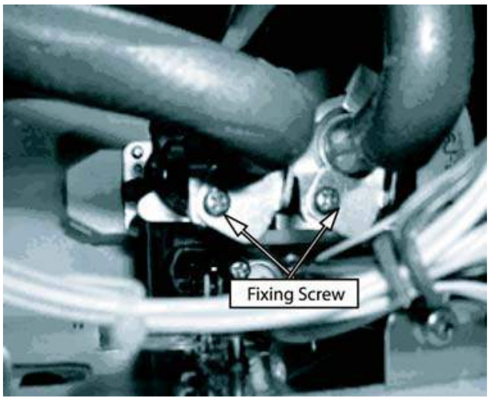
a. Remove fan motor
b. Remove 2 pin connector of inlet thermistor
c. Remove inlet thermistor (care with O-ring)
d. Thermistor



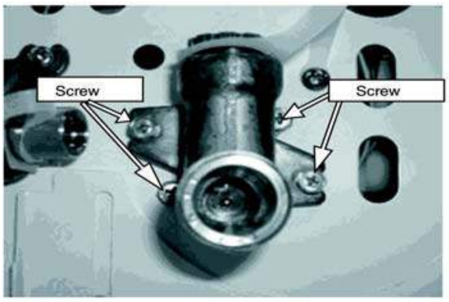


13) Removal of **Bypass Servo**

a. Remove fan motor (Refer to 14)
b. Remove 3 pin connector
c. Remove 2 pin connector
d. Remove 6 pin connector and 5 pin connector
e. Remove bracket for water connection tube.

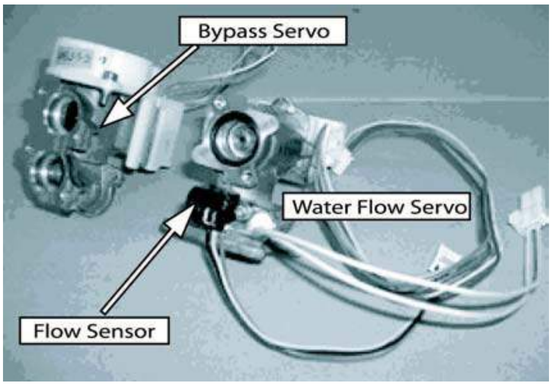


f. Removal of **inlet water connection**



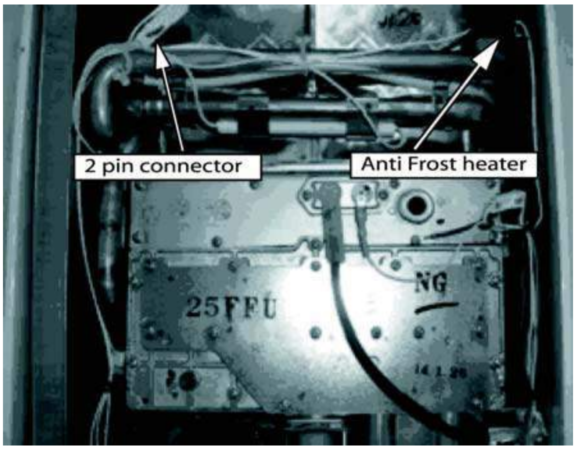
g. Remove bypass servo and water flow servo
h. Remove fitting screws of bypass servo

i. Flow sensor and water flow servo



14) Removal of **Anti Frost Switch**

a. Remove 2 pin connection for anti frost switch
b. Remove Anti Frost switch

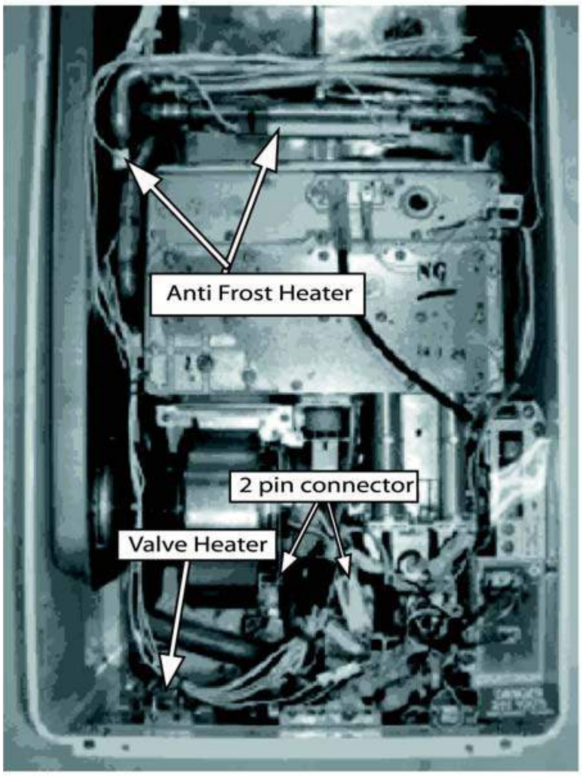


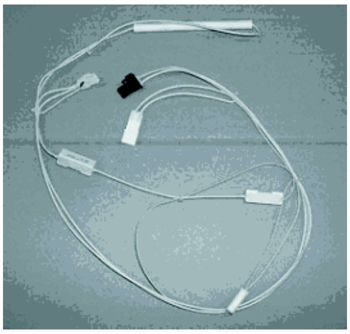
c. Anti Frost switch



15) Removal of **Anti Frost heater**

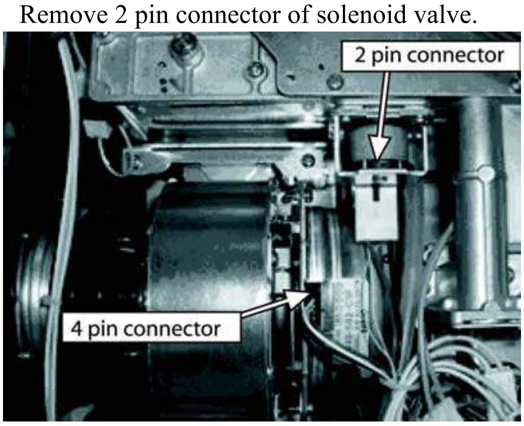
a. Remove 2 pin connection of Anti Frost heater
b. Remove bracket of hot water connection.
c. Remove Anti Frost heater.



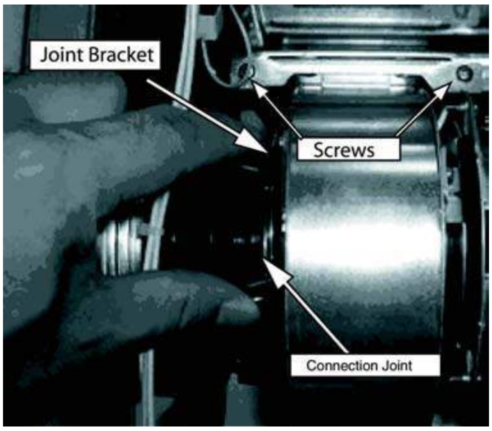


16) Removal of the **Fan Motor**

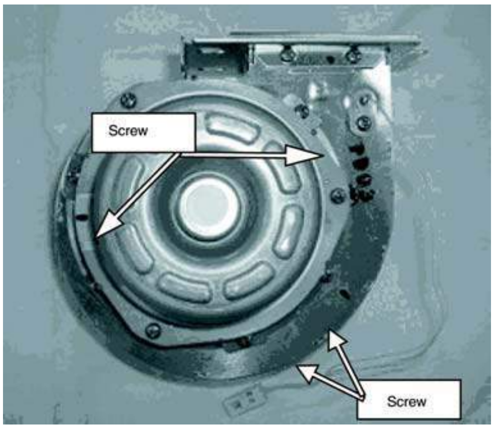
a. Remove 4 pin connector
b. Remove 2 pin connector of solenoid valve.

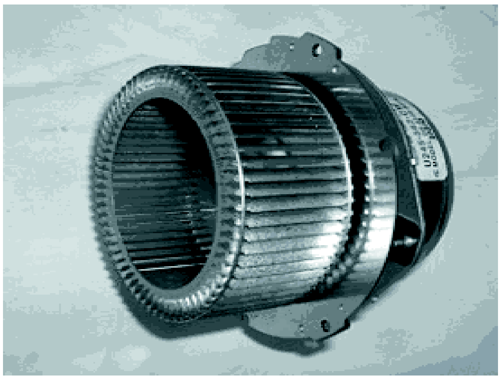


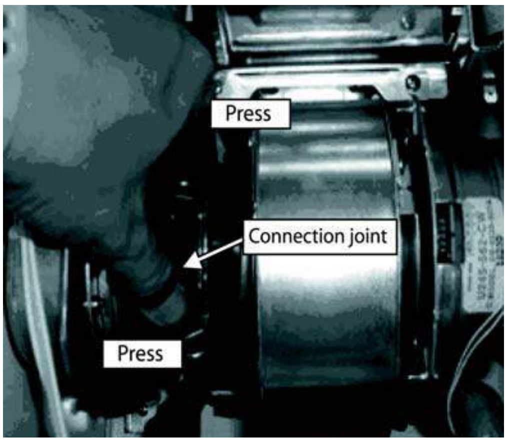
c. Remove joint bracket
d. Remove connection joint from the fan motor
e. Remove fan motor screw



f. Remove fan motor

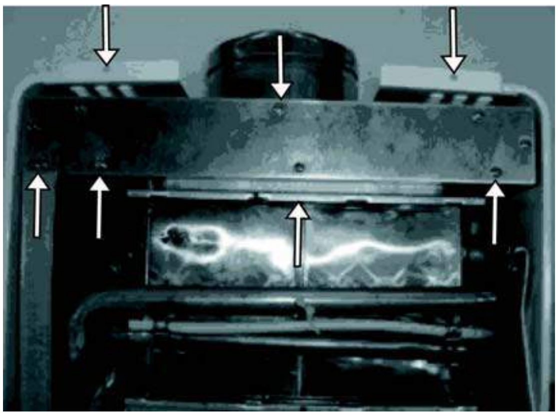




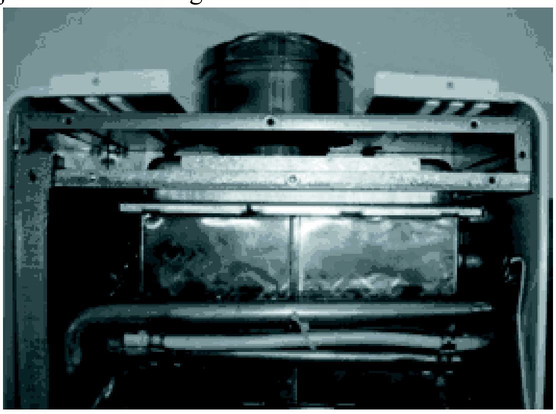


17) Removal of **Heat Exchanger**

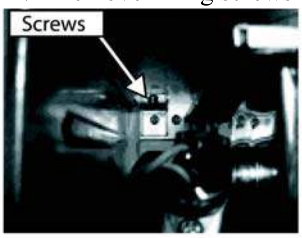
a. Remove PCB
b. Remove fan motor
c. Remove 2 pin connector of thermal fuse
d. Remove flame rod terminal of high tension cord
e. Remove anti frost heater switch
f. Remove 2 pin connector
g. Remove 3 pin connector
h. Remove back pressure tube
i. Remove air intake.

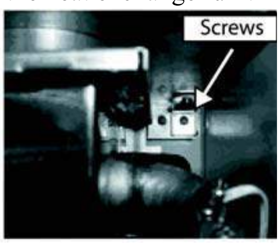


j. Remove fixing screw

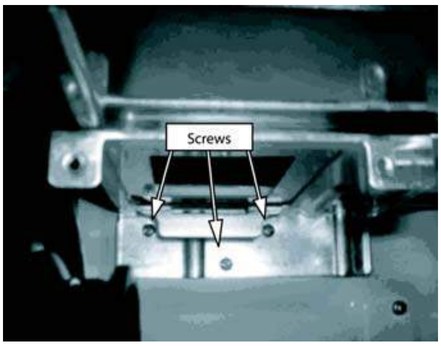


k. Remove fixing screws of the heat exchanger unit

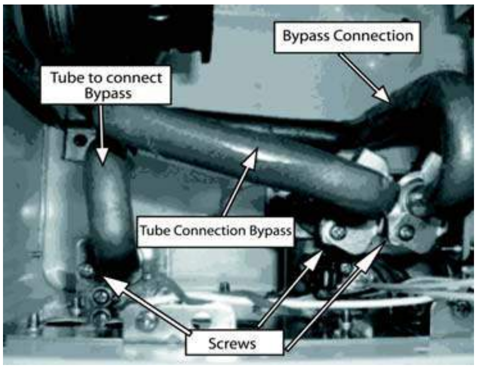




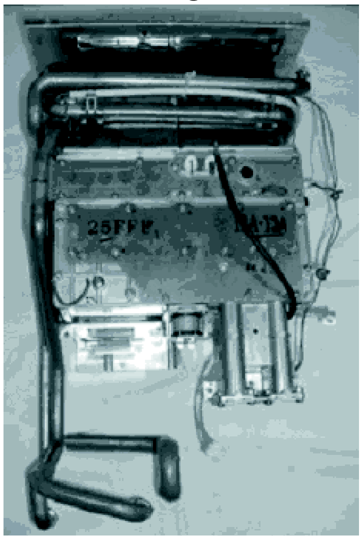
l. Remove heat exchanger screws



m. Remove **Bypass tube**

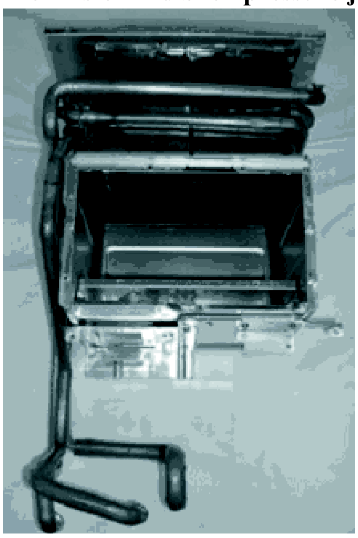


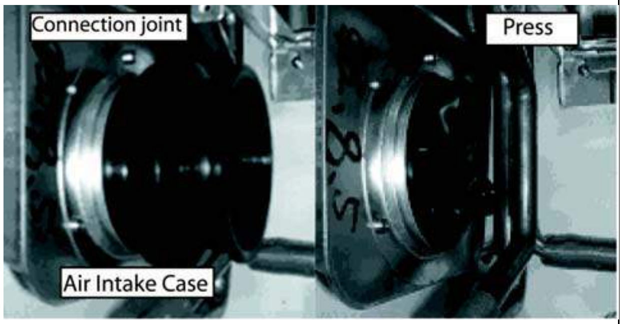
n. Pull out **heat exchanger screws**



o. Remove **manifold and burner unit.**

p. Remove **thermal fuse, over heat switch, sparker, hex thermister and back pressure joint.**



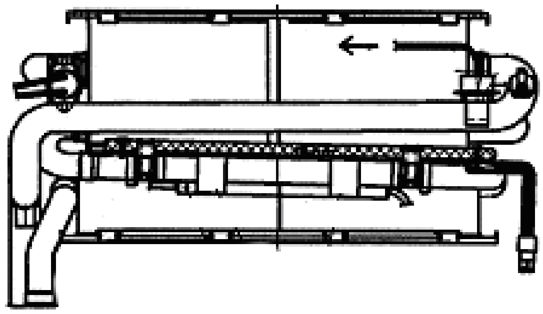


18) Removal of **Thermal Fuse**

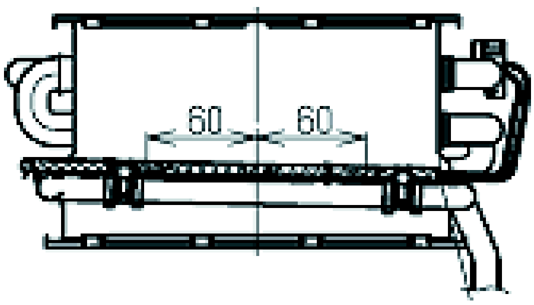
a. Remove heat exchanger.
b. Remove Thermal Fuse

After removal of thermal fuse fitting procedure is as follows:

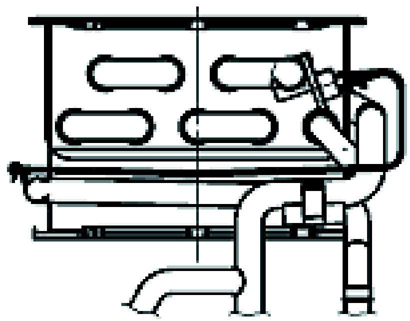
Heat Exchanger Front



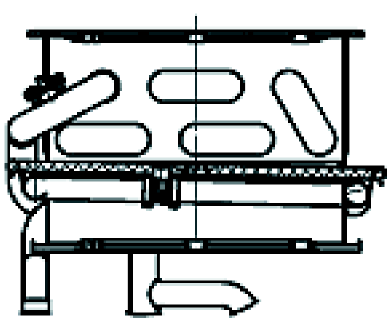
Heat Exchanger Rear



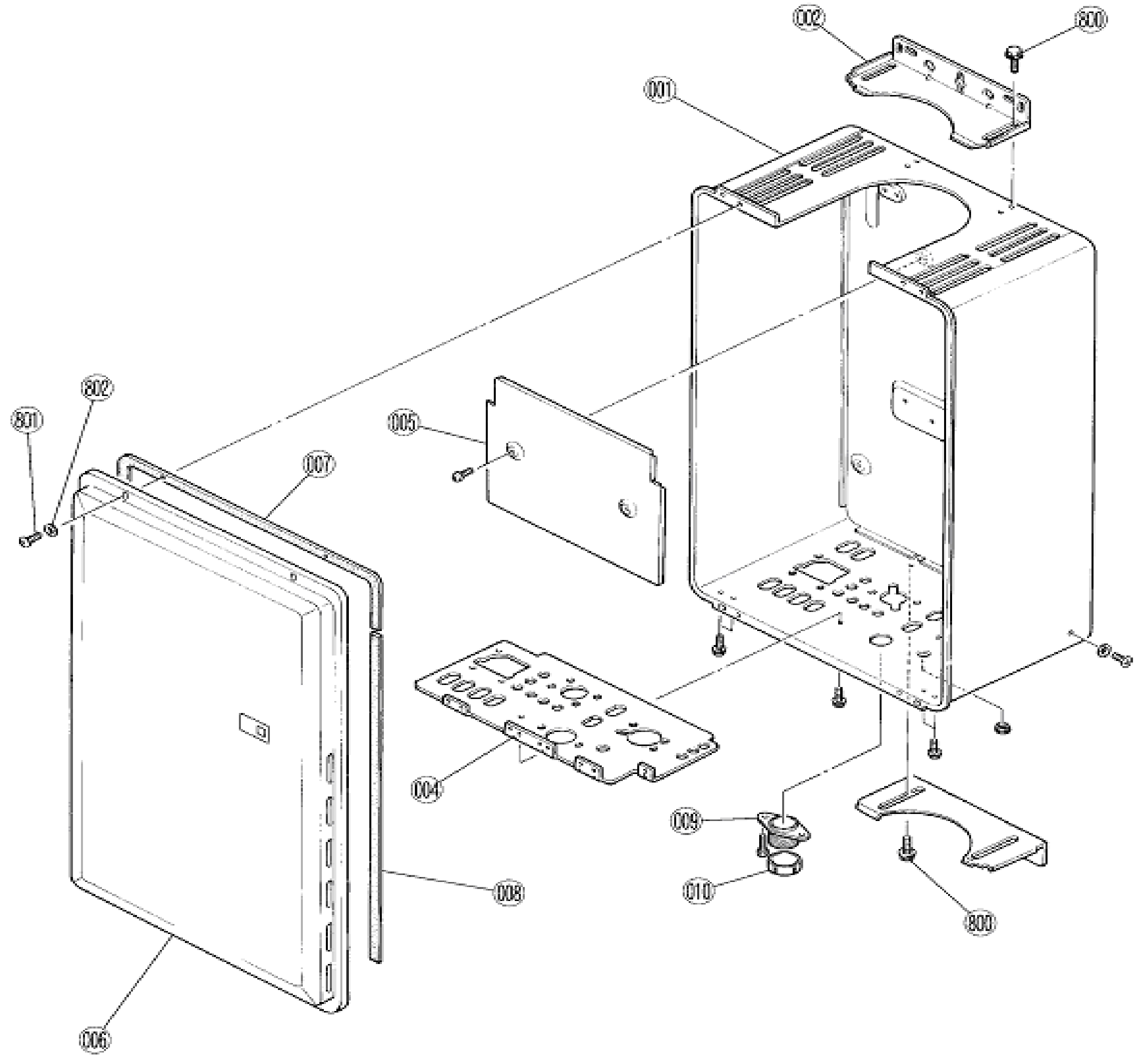
Heat Exchanger Left

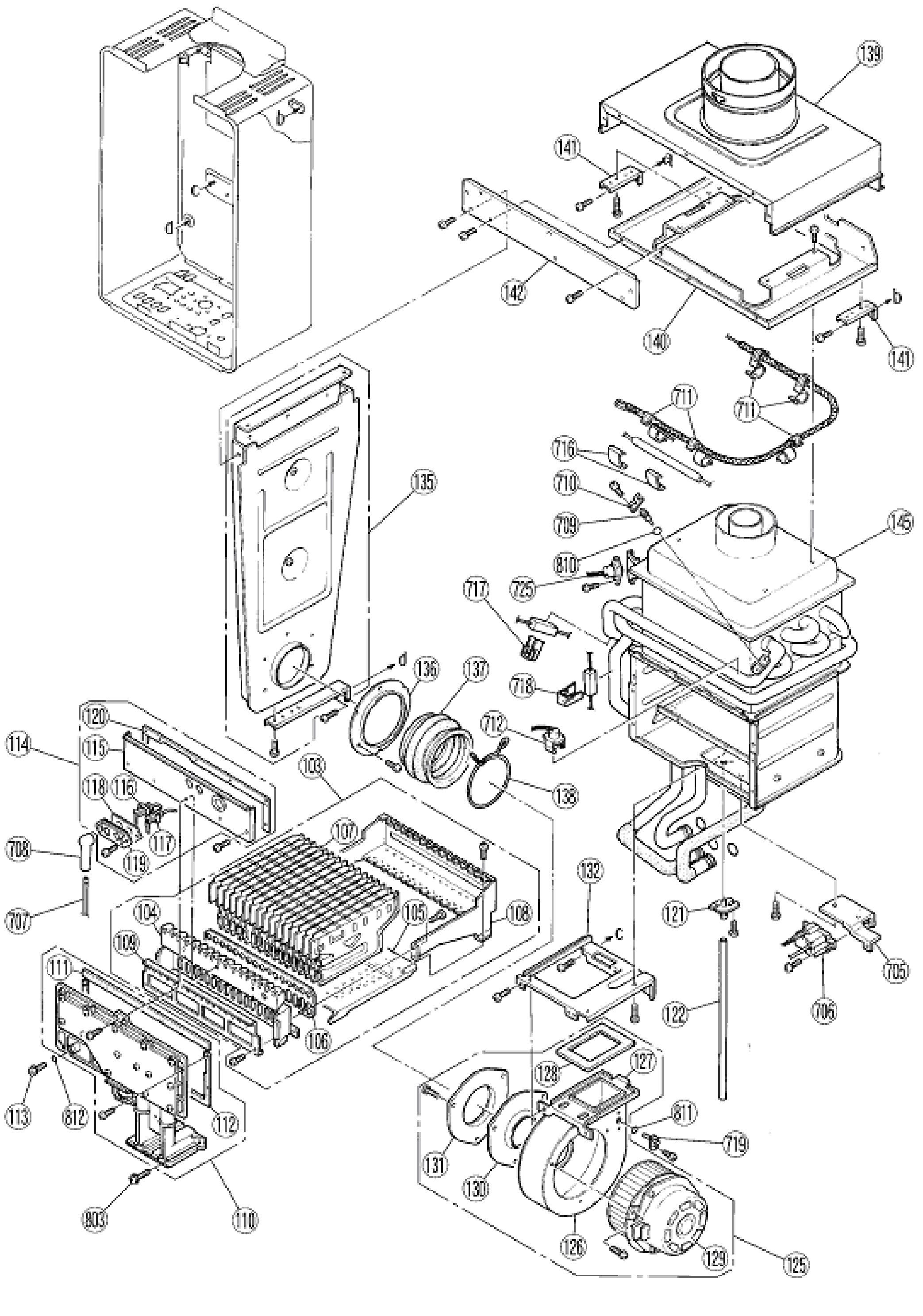


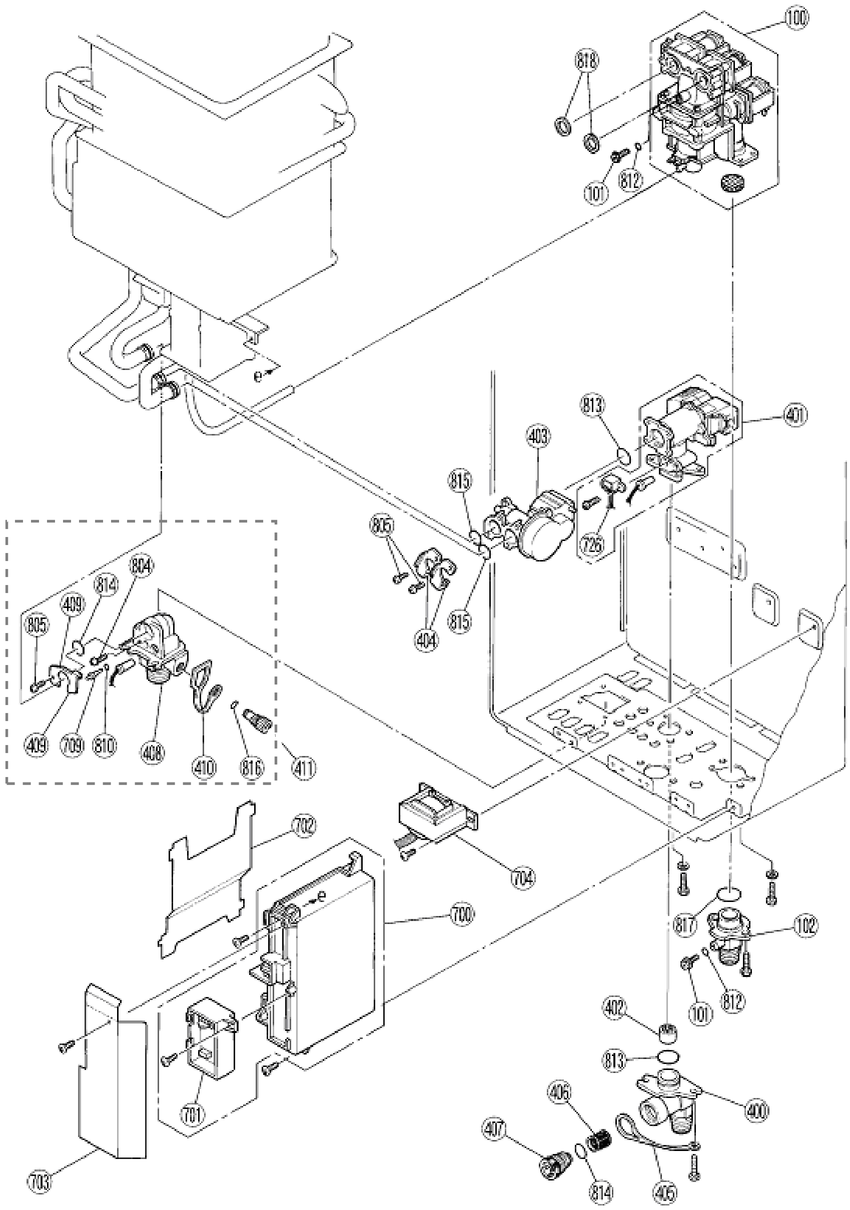
Heat Exchanger Right

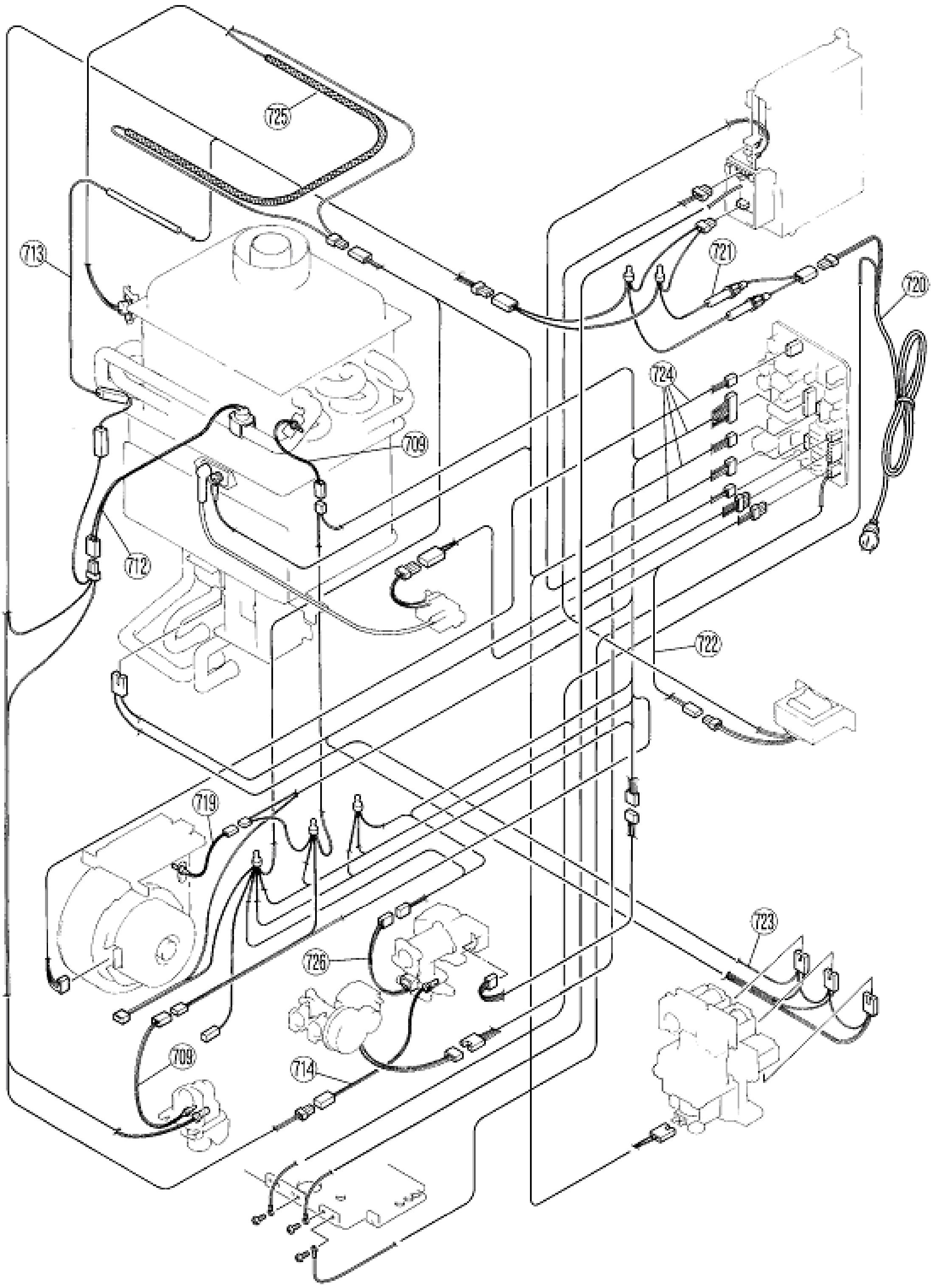


19. Exploded Diagram




139
141
b
c
d
142
140
141
711
711
716
710
709
810
725
145
717
135
718
136
137
712
120
114
115
103
138
118
116
107
117
708
119
108
104
105
707
109
121
132
705
111
106
122
706
128
127
113
812
811
112
719
131
130
803
126
129
110
125


100
818
101
812
813
401
403
815
726
805
404
815
804
814
409
805
409
709
810
408
410
816
411
702
704
700
817
102
101
812
402
813
400
406
407
814
405
701
703


725
713
721
720
724
709
712
722
719
723
726
709
714

20. Parts List

No	Part Name	RJ Drawing No	RUK Part No.	26i	HD50i
001	BODY Assy, Main - Wh	U245-100-3X04		1	
001	BODY Assy, Main - Sil	U245-100-3X04			1
002	BRACKET - Mtg.	U242-111-2X02		1	
002	BRACKET - Mtg.	U242-111-7X02			1
004	PANEL, Conn. Reinf.	U245-120X03		1	1
005	SHIELD, Heat Ins.	U245-107			
006	PANEL, Fr - Wh	U245-110-3-A		1	
006	PANEL, Fr - Sil	U245-110-5-B			1
007	SEALING, Fr Panel	BU195-167X01		1	1
008	SEALING, B. Side	AU105-113		2	2
009	CONNECTOR, Cable	BU56-602-NX06	106-104-000	1	1
010	GASKET	AU105-113		1	1
100	GAS Control Assy	C36E-43-S	120-156-000	1	1
101	SCREW, Press Pt. SeaL	C10D-5	501-275-005	3	3
102	CONNECTION, Gas Inlet 3/4	CU195-211	106-290-000	1	1
103	BURNER UNIT Assy	H73-110X04		1	1
104	BURNER CASE, Fr. plate	CH51-209X04		1	1
105	BURNER CASE, Btm plate	H73-112X01		1	1
106	GASKET, Burner Case	BH51-218X01		1	1
107	BURNER, Assy	B3A-1X04		16	16
108	BURNER CASE, Back plt	CH51-221X04		1	1
109	DAMPER	H73-115	140-597-000	1	1
110	MANIFOLD Assy (LPG)	U245-200-A	101-559-000	1	1
110	MANIFOLD Assy (Nat G)	U245-200-B	101-560-000	1	1
111	SEALING, Comb	AU155-207-2		1	1
112	SEALING LOWER, Comb Cmbr	H73-214X01		1	1
114	FRONT PLATE, Comb Cmbr	U245-260		1	1
115	FRONT PLATE, Comb Cmbr	U245-261		1	1
116	ELECTRODE	H73-120	202-156-000	1	1
117	ELECTRODE FR	AH41-216	230-047-000	1	1
118	GASKET, Electrode Packing	AH66-393X01	580-507-000	1	1
119	HOLDER, Electrode	AH66-393	580-505-000	1	1
120	PACKING UPPER, Comb Cmbr	U245-262		1	1
121	JOINT, Back Press.	U242-312		1	1
122	TUBE - C, Wind Press.	AU161-665-CX01		1	1
125	FAN MOTOR Assy	U245-753	222-513-000	1	1
126	FAN CASING Assy	U245 -555		1	1
127	CONNECTION, Fan	BH29-606X08		1	1
128	PACKING, Fan Conn.	U245-750		1	1
129	FAN MOTOR	U245-753		1	1
130	BELL MOUTH	U245-558X01		1	1

No	Part Name	RJ Drawing No.	RUK Part No.	26i	HD50i
131	HOLDER, Joint	U245-566		1	1
135	DUCT, Air Intake	U245-401		1	1
136	HOLDER, Joint	U245-408		1	1
137	JOINT	U245-409		1	1
138	CLIP, Joint	U245-567		1	1
139	TERMINAL, Air Intake	U245-410-2		1	1
140	FRAME, Flue Collector	U245-434		1	1
141	HOLDER, Flue Collector	U245-435		2	2
142	LID, Air Intake Term	U245-419		1	1
145	CLOSURE, Heat Exch Assy.	U245-690	314-516-000	1	
145	CLOSURE, Heat Exch Assy	U245-690-C			1
400	CONNECTION 3/4, Inlet Water	H73-501X02	333-301-000	1	
401	SERVO, Water Flow and Assy	M8E-6-6	301-095-000	1	1
401	SERVO, Water Flow and Assy	M8E-6-7			
402	RECTIFIER	M8D1-15	330-107-000	1	1
403	SERVO Assy, Bypass	M6J-1-3	301-084-000	1	1
404	BRACKET	AH69-310		2	2
405	STRAP, Plug	H73-512X02		1	1
406	FILTER, Inlet Water Assy	H73-511	017-268-000	1	1
407	FILTER, Plug	H73-510	196-031-000	1	1
408	CONNECTION 3/4, Hot Water	U245-865-1	333-386-000	1	1
409	JOINT, Back Pressure	U245-401		1	1
410	BRACKET, Holder	AU162-1876X01		1	1
411	VALVE, Drain Assy	BU129-520-CX02	337-048-000	1	1
700	PCB Assy	U245-770	210-564-000	1	1
701	SUB BOARD, Assy	BU195-1643-2	210-565-000	1	1
702	COVER, PCB	U245-774		1	1
703	COVER, EC	BU168-707X01		1	1
704	TRANSFORMER Assy	ET-282	224-326-000	1	1
705	MOUNTING PLATE, PCB Case	U245-257		1	1
706	SPARKER	EI-189	261-153-000	1	1
707	LEAD, High Tension	BH38-710-240	203-828-000	1	1
708	SLEEVE, Electrode	AU206-218		1	1
709	THERMISTOR	BH45-650X01	233-108-000	2	2
710	HOLDING PLATE, Large	CP-90172		1	1
711	MOUNT BKT, Fuse	U217-676X02		5	5
712	SWITCH, Frost Sensor	U242-511	234-540-000	1	1
713	HEATER Assy, A/Frost	U245-775	235-308-000	1	1
714	HEATER, Valve	U245-776		1	1
716	MOUNTING BRACKET, Htr	CF29-742X01		2	2

No	Part Name	RJ Drawing No.	RUK Part No.	26i	HD50i
717	MOUNTING BRACKET, Htr A	AU111-6539209331911			
718	MOUNTING BRACKET, Htr	AU100-721X03		1	1
719	THERMISTER, Inlet Air	BH195-1630	233-198-000	1	1
720	POWER CORD	CP-90491T		1	1
721	HARNESS, Fuse	U245-603X02		1	1
722	HARNESS, 100V	U245-885		1	1
723	HARNESS, Solenoid Valve	U245-602		1	1
724	HARNESS, Sensor	U245-603X02		1	1
725	FUSE Assy, Thermal	U245-885920	232-153-000	1	1
726	MR SENSOR Assy	M8D1-10-4920	243-072-000	1	1
800	BOLT	ZIHD0510UK		8	8
801	SCREW, Small Truss	ZAD0408UK		3	3
801	SCREW, Small Truss	ZHDC0408TK		1	1
802	WASHER	AU33-184X01		3	3
803	SCREW	CP-21478-412X01		3	3
804	SCREW, Thermister	U217-449		1	1
805	SCREW, Small Pan	ZAA0408UK		3	3
810	O-RING	M10B-2-4	520-209-010	2	2
811	O-RING	M10B-2-3	520-046-010	1	1
812	O-RING	M10B-2-13-4	520-300-010	3	3
813	O-RING	M10B-2-18	520-049-010	2	2
814	O-RING	M10B-2-16	520-048-010	2	2
815	O-RING	M10B-2-14	520-193-010	2	2
816	O-RING	M10B-2-7	520-281-010	1	1
817	O-RING	M10B-1-24	520-043-010	1	1
818	WASHER	C36E1-6		2	2
888	CONVERSION KIT Nat. Gas		923L2130NG0	1	1
888	CONVERSION KIT LPG		923N2130LPG	1	1
889	INSTALLATION AND USER INSTR	U245-790		1	1

Notes

SERVICE CONTACT POINTS

Rinnai UK LTD.
9 Christleton Court
Manor Park
Runcorn
Cheshire
WA7 1ST

Tel. 01928 531870
Fax. 01928 531880
E-mail. info@rinnaiuk.com
Web. www.rinnaiuk.com